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Some Common Diseases of Cattle.*

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I was requested to present a paper on some common diseases of cattle, but am afraid I have somewhat transgressed. I have chosen various subjects, and have dealt with them as briefly as possible, so that time and scope may be afforded for a good discussion. I might say that it must be understood that purposely I have not attempted to examine any subject in an exhaustive manner and that I shall, therefore, appear to have omitted important points. At the outset, may I be allowed to wander somewhat from the beaten track by bringing before you three subjects, two of which are forms of diseases capable of diagnosis and which are not recognised as such by text books, so far as I am aware, and the third an indication of a certain surgical operation with the *modus operandi*.

Infective Endocarditis of Cattle.

It is admitted that infective endocarditis is known to occur in cattle, as, of course, one would expect to be the case in any animal, but the only definite statement I can find concerning it, is that it is found on *post-mortem* examination, but I find that it can definitely be diagnosed during life, particularly in an acute form, which I shall describe.

There are three forms of infective endocarditis—acute, sub-acute and chronic. The acute form I have always found to be fatal and it has nearly always occurred in in-calf cows, which have invariably aborted during the attack. The duration of this form is about ten to fourteen days. The sub-acute form occurs in stock from one to two years' old, as is also the case in the chronic form. The sub-acute is fatal in 50 per cent. of the cases, and in the chronic form the mortality is 100 per cent. The duration of the disease in the last-named form is from one to two months, the duration of the sub-acute form is about a week. Both the sub-acute and chronic forms are rheumatic in origin and have for the principal symptom, other than temperature and signs of serious illness, a painful condition of the distal extremities of the metacarpal and metatarsal bones, on manipulation, and which is noticed when the patient attempts to rise from the recumbent position.

In the sub-acute form, as one would expect, the symptoms are more urgent than those of the chronic form, and if a recovery takes place the animal will appear normal in about ten days. Undoubtedly in all three forms there is a focus of infection present in some part of the body, and in a considerable proportion of the chronic cases I have found a diseased condition of the jawbone.

In the acute form the train of symptoms is constant, the final one being an œdematous condition of the dewlap. This points to the probability of the endocarditis being secondary to intestinal or lung lesions, since symptoms of intestinal and pulmonary trouble have been in evidence for a week or so. The cases, as I have seen them, show as follows: an in-calf cow is suddenly taken obviously very ill, with a temperature of 105-106°F., is constipated, has a slight expiratory moan, anorexia is well marked, the breathing is quickened. The constipation is soon followed by diarrhœa of a very offensive nature, a little blood (or more) is seen in the fæces and there is some straining. At this stage the lung symptoms appear to be less evident, but a little blood is seen to trickle from the nostrils. There is great weakness and she is inclined to fall when moving about the box; when down she has difficulty in rising; the last symptom to put in an appearance is œdema of the dewlap.

On *post-mortem*, evidence of enteritis and pneumonia is found, and an endocarditis, with vegetations on the valves similar to those seen in chronic swine erysipelas. These are also found on *post-mortem* examination of the chronic cases and almost invariably an inflammatory condition of the distal end of the metacarpal and metatarsal bones. In the sub-acute cases which prove fatal, the vegetations are very minute.

An Unrecognised Form of Post-parturient Dyspepsia.

The usual nervous and chronic forms (the latter having constipation as a prominent symptom) are well known, but I recognise a form with quite different symptoms. I bring this before you because of its diagnostic importance—it enables one to prognose confidently in any particular case—these cases doing well without treatment, whereas troubles with similar symptoms are sometimes serious.

The subject may be a calved cow or heifer, usually of a good milking strain, as is the case in the already recognised forms of post-parturient dyspepsia. It happens at the same period after calving, but the symptoms, although digestive, are of quite a different nature. Usually severe diarrhœa presents itself suddenly. A constant symptom is a temperature of 105-106°F. She suddenly goes off her milk and eats nothing; the consistency of the fæces is in some cases normal, but if examined will be found to be undigested. They usually appear normal in a few days, although the temperature remains high, especially those which have not shown evidence of diarrhœa. The duration of the trouble is from a week to ten days. Apparently the favourite time for these cases to occur is about a month after calving. About 30 per cent. have the characteristic odour of the milk, as is recognised in the chronic type of the disease—not well marked, but which can be detected on careful examination of the milk, etc.

A Radical Operation in Case of Extensive Infiltration of Urine, resulting in Extensive Swelling under the Abdomen in Bullocks, due to Balanitis.

Occasionally, on account of neglect on the part of a client to call in early assistance in a case of balanitis, the urine has become infiltrated into the subcutaneous tissue around the sheath, the end of which is closed. A septic condition of the wall of the sheath favours absorption of the urine, which has been unable to get away from the sheath in the usual way. The great extent of the swelling in these cases makes one doubt the advisability of opening up the sheath in the usual way, through this extensive swelling. To obviate this, the glans penis is brought out through the skin just in front of the scrotum, where it will be found lying. The operation is as follows: a local anæsthetic is injected about three inches in front of the scrotum, and an incision through the skin is made transverse to the direction of the penis. A finger is introduced into the wound from one side and is used for taking up the sheath after breaking down its connection with the subcutaneous tissue. It is thrust (as a tenaculum is used in bringing into view the nerve in neurectomy) between the sheath and the abdominal wall, when the former is brought outside the wound, cut transversely through and the glans penis is brought just through the wound and left. The œdema of the skin is treated surgically and the local focus of infection incised, etc.

Digestive Troubles in Pail-fed Calves.

The great majority of these cases are, in my opinion, due in the first place to inability of the abomasum to deal with the curd formed from the milk. I am quite aware that a considerable amount of curd is found on *post-mortem* of

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calves, and that it is seen in the abomasum of calves killed for food after being fed on milk. At the time when it causes trouble it becomes foreign to the stomach and favours infection, absorption and auto-intoxication, in many cases resulting in a septicæmic condition, as seen when diarrhœa, fever and more or less complete anorexia present themselves. Whatever treatment is adopted, the aim should be to get rid of the accumulation; at the same time, it should be remembered that milk has been a factor in the trouble. If the accumulation is not taken away by operation, internal antiseptics are indicated and must be prescribed. Whatever form of gastric or gastro-intestinal trouble is being treated, the possibility of an accumulation of curd must be kept in mind, and the use of sedatives considered therefore to be contra-indicated, generally speaking. In all the cases when seen in the beginning, it is my practice to operate, and if one is fortunate enough to see the case before infection has taken place with auto-intoxication, a fatality is very rare. I do not advise operative treatment in advanced cases, particularly when the temperature is high, straining is in evidence, or when there is complete anorexia. The symptoms of typical cases present themselves in calves from a week to about eight weeks' old, and are as follows: the patient is usually slightly disinclined to take food from the pail, although he may be as keen on food as ever. After feeding, he frequently appears sleepy and lies about a lot, or after food the breathing is quickened and might be mistaken for a symptom of lung trouble. The condition of the fæces may have a tendency to constipation or to diarrhœa, or may be normal. There is commonly grinding of teeth, and a peculiar characteristic reflex cough is always in evidence at some period of the illness.

The calf often lies with its head outstretched or with it lying on its chest, as seen frequently in a case of milk fever; fits are prominent symptoms. The temperature may be normal for some time, but may grow up to over 106°; those with a high temperature require rather more thought as to the advisability of operative treatment, but may recover with careful medicinal and dietetic treatment. The operation is done under a local anæsthetic, the most favourable site for the incision being immediately behind the sternum on the right side. It should be made four or five inches long, the skin being previously prepared in the usual approved manner. The calf is held by assistants on its back on a table or box just large enough to hold the calf, but not too large to be in the way of the operator or his assistants. The skin, muscles and parietal peritoneum are gone through, any bleeding vessels being ligatured or treated otherwise to facilitate ultimate healing. The hand is introduced into the abdominal cavity and the abomasum located. At this stage the calf is turned on its right side so that the contents, after incision through the stomach wall, will fall on to the ground and thus avoid infection of the wound or the peritoneal cavity. The curd is brought gently into the hand as the testicle is grasped, before the incision is made into the scrotum, in castration. The incision through the wall of the abomasum is made as small as will allow the curd to be extracted and to permit of the introduction of the first two fingers for the purpose of further examination, as other material such as straw, hay, binder twine, or chewed-up wood may be found further in, resulting from the pica, although these are usually mixed with the curd. The stomach is then sutured with as few sutures as are compatible with thoroughness—it being remarkable how soon adhesion takes place between the visceral and parietal peritoneums, for, after twelve hours on *post-mortem* examination the stiches in the wall of the abdomen are difficult to find on account of a wonderful plastic adhesion. The parietal peritoneum is sutured after returning the abomasum into the abdominal cavity, then the muscles and skin separately, the wound afterwards being soaked with tr. iodine. The suture material I use is silk, although other material may be considered by some to be more surgical, but I have never been able to trace any trouble to the suture material used and silk is certainly easy to manipulate. The post-operative treatment necessary is simple and as is naturally indicated; the food for a few days must be easily digested and given in small quantities, although in about four, five or six days food may be given in the usual quantities. For the first day or so after the operation albumin water answers well. If thought necessary, an agent with the power of refining curd can be added to the milk in the form of lime-water, barley-water or citrate of soda, and can be used according to the condition of the fæces, the lime-water having a constipating effect, barley-water a relaxing one, while citrate of soda, having neither, is indicated when the consistency of the fæces is normal.

When medicinal treatment is adopted, aperients, change of food, given frequently and a little at a time, and internal antiseptics are indicated. The antiseptics which are suitable are formalin, kerol and dimol. Of these, I prefer the first, formalin, and give from 15 to 25 m.m. a day mixed in the food.

The Indication and Practice of Delaying the Contraction of the Uterus in Retention of the Placenta in the Cow.

When dealing with cases of retained placenta of cows, particularly in these days when the subject of sterility is looked upon seriously, we have a two-fold duty to perform. Opinions have differed as to when is the right time to remove cleansings, but I think the time has come when we should have no set time for removing these. I am quite sure statistics would show that more cases of sterility occurred in cows after having the membranes taken away in a careless fashion than in those which had no attention whatever. After taking away a great number of these, I have been compelled to look upon the maternal cotyledons frequently as foreign matter to the uterus and it is my practice to consider the practicability of getting the uterus rid of them if they are unlikely, on account of their septic condition, to be naturally absorbed. We are all aware that after a normal parturition the cotyledons become absorbed, but once they have become absorbed they are non-existent, and, so far as my experience teaches me, it matters little how they become non-existent, whether by absorption or by manual extraction through the os. When I state this I do not mean to infer that I would take them away manually unless I considered them foreign to the uterus, and incapable of being absorbed properly, and their detachment possible without bleeding. It must be evident to all who are constantly examining uteri, particularly on abortion farms, that a normal absorption is frequently impossible. In order to get these cotyledons away it is necessary to be able to get the hand into the horn of the uterus and to be able to get it in whilst it is dilated enough for the opening of the hand to some extent to allow the cotyledon to be firmly grasped for extraction. If all the placenta is taken away before, unless there is some amount of accumulated fluid from the walls of the uterus, the horn will contract to such a degree that it is impossible to get the hand in, let alone open it. It is true that the most posterior cotyledons will be brought to the os, which will probably open and allow them to come away independent of help, but it will not be so with the anterior ones; the natural waves of contraction which come into play after the normal case of parturition being absent, these will frequently be retained and the septic focus created—although I recognise that even this septic material usually becomes absorbed in a most wonderful way. At this stage I should like to state that I am of the confirmed opinion that 90 per cent. of the sterility cases in which no abnormality can be found, is in this locality, and it will not surprise me if some day we are told that the Fallopian tubes have to do with sterility in a great percentage of these cases. I understand there is a school of human surgeons to-day acknowledging this, who are using an instrument to ascertain whether or not oxygen introduced into the uterus forcibly can escape through the Fallopian tubes into the peritoneal cavity, and if this escape does not take place it is thought to be the cause of the sterility—a purely mechanical sterility due to occlusion of the Fallopian tube. The ovaries may become infected *via* the Fallopian tube, but actual infection of the ovary is, in my opinion, uncommon. It is a notable fact

that we get more or less normal œstrum in the majority of sterility cases—it is so in most of the cases with which I meet—and on examination of the uterus *per rectum* it is found to be normal, the discharge at œstrum being albuminous in appearance and sterile. Considering the actual practice of getting the uterus clear of all foreign material in a case where the cotyledons are diseased, recognising the fact that the uterus usually contracts after removing the whole cleansing, it is necessary to keep the horn dilated enough for the introduction of the hand, and this can only be done, so far as I am aware, by leaving some of the after-birth in the uterus, particularly at the extremity—this is actually seen in practice when one has to leave this anterior portion attached, the horn frequently remaining dilated for a considerable number of days. I might mention that the same does not usually apply when a portion of the cleansing is left protruding through the os. In a nut-shell, with the retention of a piece of the placenta in the extremity of a horn, there being no cleansing actually in the os, the uterus will be considerably dilated for some days, and the hand can be introduced into the horn comfortably, allowing the whole uterus to be thoroughly evacuated. In all cases it is important, naturally, to get everything away as soon as possible, and to this end the case should be visited every two days—the os being forcibly dilated if necessary. I am of the opinion that the os uteri can be considerably mutilated without any trouble ensuing. Furthermore, I would like to express the opinion that I hardly recognise the term cervicitis, especially when considering sterility, because I feel confident that it is on the rarest occasions that it is the cause of sterility. With the hand efficiently lubricated it is safe to force the os open, fingers and hand of course being used in the form of a cone. The cervix may give way and tear under the pressure, but that will do no harm. The moment at which special care is necessary is when the knuckles are being forced through the internal os when, unless the hand is properly lubricated, the inner lining of the body of the uterus may be ruptured ; this will cause straining and make deep infection possible, but it is hardly possible for this to happen during the first week if there is foreign matter in the uterus. Before ending this subject I should mention that the treatment of the " other " horn, so to put it, requires more thought and attention than the principal one for the reason that it is small and will soon contract to such a degree that it is impossible to get more than a finger into it, although there may be cleansing and cotyledons further forward. Therefore, early attention should be given to its evacuation. The introduction of suitable antiseptic solution can be used to advantage in some cases and particularly when fluid has to be introduced to start syphonage in the absence of straining. Generally speaking, except when there is an accumulation of fluid to be taken from the uterus, manual extraction is all that is necessary. After all examinations of the interior of the uterus, iodoform in its pure state should be introduced into both horns. It is, in my opinion, second to none for these cases in preventing septic absorption, and in coming to this conclusion I am not forgetting its disadvantage—that of tainting the milk, butter or cheese—and this fact, of course, must be communicated to the owner of the cattle.

The Control of Contagious Abortion in Cattle.

I am bringing this subject before you because I see by the *Record* and other veterinary publications that opinions differ as to the usefulness of the living vaccine. At the outset, I shall state that I am of the opinion that the use of this vaccine is by far the most useful means of combating this dreadful disease, and I am not quite sure that it is possible to use it to disadvantage on any abortion-affected farm. I have seen so much of abortion and watched its progress on particular farms, both where the live vaccine has been used and where it has not been used, that I can say quite happily that it is one of the greatest blessings to the cattle practitioner. The statement that the use of the live vaccine causes sterility has often been made, but when sterility has taken place on a farm to any extent after its use I think it has been due to the previous continuous infection, or to the extreme virulency of the infection. I have had plenty of opportunity of using the live vaccine on farms as a preventive measure, when a farmer has taken over a fresh farm and had to buy his cattle from many sources, undoubtedly many coming from infected herds, and I have never had occasion to blame the vaccine for any trouble whatever. There certainly has never been any spread of the disease on account of its use. I consider the early use of vaccine as a great step in the control of abortion and to this end everything possible should be done. It is true that we are not aware of the presence of abortion on many farms until it has been in evidence for some time and quite a number have aborted, but there are times when one can suggest a possibility of its presence before any abortions have taken place. The following should always put us on our guard when we see them and be the means of our warning a farmer as to the possibility of the presence of contagious abortion, apart from the actual occurrence of abortions :—

An unnatural discharge from a newly-calved cow.

Retained cleansing (although the act of parturition may have been at the normal time).

Sterility of one or more cows.

Premature drying off of a cow.

A discharge from the vagina of a pregnant cow.

Swelling of joints, notably hock, stifle, knees and sometimes fetlocks.

Slackening of pelvic ligaments.

Swelling of the vulva.

Premature filling up of the udder.

A cow coming in œstrum several weeks or later after " service."

Or the evidence of any of the following facts may assist :

The purchase of any newly-calved cows or, indeed, any cows.

A fresh bull being used, or one at another farm.

The purchase of calves.

Straying of cattle into the fields.

When anything suspicious in a case presents itself, the subject should be isolated and symptoms of a suspicious nature looked for in others. Concerning the blood tests—the agglutination and complement fixation tests I consider useless, as a negative reaction cannot be relied upon in the case of a first abortion. When the " isolation " method of all reactors and non-reactors, pregnant or otherwise, can be adopted, then the repeated blood test is certainly indicated, although it cannot confidently be relied upon—and vigilance must be exercised on the part of the attendant, who should be made acquainted with the premonitory symptoms of abortion, etc. My procedure on a newly-suspicious farm is, as soon as there have been two abortions (it should here be understood that the first aborter has been isolated and all possible disinfection carried out) to have both bloods tested and, if one is found to be positive I commence vaccination, with the live vaccine, of the empty cows and heifers as soon as possible.

I use it a second and a third year, but consider the possibility of doing the heifers only that year if during the second year the number of abortions has been practically negligible. Isolation should be practised of all aborted cows, and disinfection carried out constantly where necessary, the isolation being for a period of two months, if practicable. This is necessary in case the vaccination does not immunise any one of those subjected to it.

The Control of Johne's Disease in Cattle.

Isolation of all cases of scouring cattle should be practised, but the appearance of the symptoms in Johne's disease is frequently somewhat insidious and a great deal of harm can be done before there is any real suspicion that the cow is the subject of the disease. I have found that isolation of cows suffering from diarrhœa as a symptom of the disease is in itself insufficient to do away with the trouble on a particular farm. On that account I have practised for some considerable time the testing of cattle with avian tuberculin. This is done as soon as the cattle are brought in for the winter, to give the pasture a rest from the contagion. They are again subjected to the test

just before being put out to grass. I have found this method usually finishes the trouble. All except the young calves are tested. On examining microscopically fæces from those giving positive reactions, although not scouring, acid-fast bacilli have been found. This is the reason, I take it, why isolation of scouring cattle will not put an end to the disease. In the district in which I practice the farmers are stock raisers and get rid of their cows at the third calf, and since tuberculosis is a disease mostly of older cattle, although of course we get it in young ones too, the matter of tuberculous cattle reacting to avian tuberculin is unimportant, and it is found profitable to include all reactors as if they are positively the subject of Johne's disease, since, on a Johne's disease farm, it being a disease mostly of younger cows and heifers, the reactors are much more likely to be the subject of Johne's disease than cases of tuberculosis. Taking these considerations into account, with the fact that a case can be both tuberculous and the subject of Johne's disease, there is no doubt about the adoption of the test being justifiable. The reactors are isolated and fattened as soon as possible, the dung being put onto ploughed land after being mixed with lime. Drainage is always improved where necessary whatever method of control is adopted, and old pastures avoided if possible for a season and dressed with lime. I am inclined to think that there is an age of special susceptibility and I have known the disease stamped out by a farmer buying older cows instead of rearing young stock, without testing being adopted.

Magnesium Sulphate.

Magnesium sulphate, in my opinion, is a very much underrated drug in cattle practice. I consider that we have nothing to equal it in cases where elimination of deleterious material is indicated, and it is particularly useful to relieve some forms of more or less chronic constipation. I have also great faith in it in the treatment of mammitis, and it is my practice in many cases to combine its use with that of pot. nit. in doses of four ounces—the dose of mag. sulph. being two pounds in a quart of water when the bowels are constipated. Many digestive troubles I find respond to the *judicious* use of mag. sulph. as an aperient, while strychnine and formalin are also given as a stimulant and as an intestinal antiseptic. This line of treatment, combined with the total abstinence from food for a while, or a modified diet conducive to a normal action of the rumen, is very useful. I have on many occasions given two pounds of mag. sulph. to a cow every second or third day for a month when severe constipation has been in evidence, with invariably good results, so it cannot be such a dangerous agent to use as some would have us believe. Naturally, it will do harm in cases of severe gastric or intestinal irritation, *e.g.*, in acute abomasitis, or in repeated doses in cases of atony of the rumen, and in any case, if a dose of 1 lb. does not act as an aperient, then it must not be repeated; but once an aperient action has been effected in a case, its further use may be indicated.

Chloral Hydrate.

As a cattle practitioner, I should not like to be without chloral hydrate. I have used it hundreds of times in 4 oz. doses to allay serious straining while the patient still has considerable vitality, and it is to the use of it in this dose to which I particularly wish to refer. In a heifer 3 ozs. will do all that is desired, I feel confident, but 4 ozs. seems to have become my common dose for a parturition case or in a case of an everted uterus. I know it is safe and therefore carry on with this dose. I give it *per orem* myself, carefully, in 3-4 pints of cold water. The patient is down on the ground within half-an-hour—usually from fifteen to twenty-five minutes. The straining is very little after that time and operations where straining is adverse to a successful issue can be carried out with comparative ease. There may be seen some ingesta coming from the nostrils or mouth with a 4 oz. dose in the case of a heifer, but I have never known any lung trouble to supervene. The cow is up from 4-8 hours, usually nearer eight than four. In some cases she has diarrhœa the next day, which is harmless. It should be noted that choral hyd. is excreted in the milk and that a single calf fed on the first milk from a cow after having this dose will die from choral poisoning, and this must be kept in mind. If, when giving a grown cow 4 ozs. I find she is particularly headstrong and is difficult to drench, I give her an extra oz., making it 5 ozs., as I have found she usually needs it. When pulleys are not used, 3 ozs. is a good dose as it will allay the straining considerably and she will usually stand throughout unless suffering severely from shock. The standing position will appeal to some as being better. A dose of 4 ozs. will definitely put her on the ground for some hours and this is the dose I always give for severe straining. For operations, I frequently use the large dose, local anæsthetic, and from ½ to 1 oz. of chloroform with the muzzle. Double these large doses are fatal and it would be unwise to increase the dose, but in giving the above doses no risk whatever is taken. Shorthorn heifers, after calving, weigh about 9 cwt. live weight, and cows 11 cwt., and it is to those to which the above doses refer. An adult bull (Shorthorn) can be thoroughly quietened with a 4 oz. dose, and he will still stand and can be walked any reasonable distance under its influence.

Discussion.

Mr. Ackroyd expressed the opinion that a most interesting paper had been presented and that the members present would have some difficulty in discussing all the points raised, as the paper covered an enormous field. Most of the cases quoted were conditions which were met with by the general practitioner in every-day practice. With regard to the peculiar smell in the milk in post-parturient dyspepsia, he thought that this was due to retention of the placenta. Referring to the use of chloral hydrate, he did not give such big doses as Mr. Stinson. With reference to the retention of the placental membranes, he used to be alarmed on finding a lot of cotyledons coming away with the fœtal membranes and anxious as to the effect it would have on the cow, but he had no fear now. He was under the impression that when cotyledons had necrosed, at another parturition period there would be a vacant area present; he would like to know if, after calving, the cotyledons disappeared. It was astonishing how well a cow would do after removal of the cotyledons. Retention of the placental membranes was one of those questions which was always with them and he was not much wiser, in spite of Mr. Stinson's paper. Mr. Ackroyd stated that he inserted his fingers in the os and did not think it a dangerous proceeding. With reference to endocarditis, he did not think he had had any cases of that condition. He again wished to thank Mr. Stinson for his paper and would look forward to its publication so that he could read it with great care.

Mr. Mayall said he had enjoyed the paper but he thought the title was not correct, as Mr. Stinson had put before them some uncommon diseases. He was impressed by what Mr. Stinson had said about Fallopian sterility and tuberculosis. With regard to swelling of the limbs in endocarditis and abortion, he wondered whether this was connected with tuberculosis also. Tuberculosis had been studied for years and little attention had been paid to the organs of progression. In the dog, on many occasions the limbs were swollen; in cattle the limbs were swollen in the condition known as felon. Many people were of opinion that swollen limbs were a form of tuberculosis. He was not at one with Mr. Stinson with reference to mag. sulph.—in his, Mr. Mayall's, opinion, it was overrated. It had no effect on the walls of the rumen when these walls were paralysed. Germans for years had used strong drugs. He remembered that when he first used strong drugs the farmer was a conservative man and he carried out his instructions with regard to their administration, which was to give them to the patient every two hours and not to take any notice of the effect. The farmer shortly afterwards informed him that the cow was in a bad way and he thought she would die. However, in the morning she was feeding and passing dung well. In Germany, they held that if these drugs did not overcome

the paralysis of the rumen, there was a foreign body present. He was surprised at the doses of chloral hydrate Mr. Stinson gave. He never gave more than 2 ozs.; the objection he had to giving a big dose was that chloral was not good for the heart whilst a cow was in an exhausted state. He would like Mr. Stinson to tell them how he administered chloroform to cattle—most veterinary surgeons did not know much about that. He usually used a cloth-lined muzzle, and the cows had done all right, but he had not been satisfied with the method and he would like to read some exhaustive work on the subject.

Mr. LINDSAY thanked Mr. Stinson for his very interesting paper. So far as the parturition condition mentioned was concerned, he thought that it was a form of indigestion. He thought there was a lot of difficulty in treating the condition, and Mr. Stinson did not say very much about the treatment. He himself had found formalin, hydrochloric acid and strychnine the most successful. With reference to retention of the placenta, it was important to retain some of the placenta in order to keep the os open. No doubt, in a great many conditions one got lesions of the cervix and he did not know if they played a big part in sterility. Referring to the removal of the cotyledons, he agreed with Mr. Stinson. He had a case with a retained placenta and could not get at the uterus for cotyledons, but he effected a smooth removal of the placenta. Mr. Stinson's operation for foreign bodies in calves was very interesting; he had not done it, but thought Mr. Stinson's results were very good.

Dr. HARE quoted Mr. Curbishley as having said that 75 per cent. of cattle practice was associated with the uterus and pointed out a need for more information on the physiology and pathology of the genital system of cattle. Dr. Hare stressed the ease with which infection could take place through such an absorptive surface as that of the uterus, particularly when the surface vessels were ruptured. This left a vital entry for organisms which might set up septicæmia if the body resistance of the animal was low, and it might lead to endocarditis. Another result might be swelling of the joints and tendon sheaths. Another point Mr. Stinson mentioned was Johne's disease, but he did not make it clear if he made his diagnosis upon diarrhœa alone. He, Dr. Hare, gathered that he did. The speaker pointed out the possibility of a mixed infection of parasitic enteritis and tuberculosis.

Mr. CURBISHLEY said he had enjoyed listening to an interesting paper which, in his opinion, raised a large number of questions. Unfortunately, he could not remember having had a case of infective endocarditis. Mr. Stinson had stated that in the milder cases he cured in about ten days; he would like to know how he achieved that result and also how he arrived at the proof that the animal was suffering from heart disease. A good many cases died and he would like to know whether they died from heart disease or general infection. He thought more research work was needed in post-parturient dyspepsia. With regard to the operation for curd in calves, Mr. Stinson deserved credit for bringing this forward. It was new to most of his audience and he would like to ask if Mr. Stinson could give some explanation of the formation of curd in some stomachs and not in others. He would also like to ask if Mr. Stinson would undertake a similar operation in the foal and what result he would expect. With reference to the author's treatment by drugs, Mr. Curbishley asked if recovery was usual without operation. If operation was resorted to, was there any need to remove any sutures? Referring to abortion, he asked whether Mr. Stinson used live vaccine on animals of all ages, also was it likely that the use of vaccine had an effect on the milk yield and was the effect noticeable after the first vaccine? A dairy cow would carry its calf after vaccination—he would like to know if Mr. Stinson had used the serum and, if so, whether a cow would carry its calf and if there was any effect on the calf; he had been told that it was better to rely on isolation methods. Mr. Curbishley said he did not agree with the use of mag. sulph. at all, he thought that it was a poison and needed to be given with great care to a cow with gastric trouble, or it would kill it. With reference to chloral hydrate, however, he could not do without it, but thought that 4 ozs. were not often required—he got good results from the use of 1 to 1½ ozs. He had been greatly interested in Mr. Stinson's paper and would try to carry out some of his theories.

Mr. HOLROYD remarked that he had never recognised a case of infective endocarditis. Dyspepsia he had recognised as a condition known in Lancashire as "staggers," and he treated as for milk fever. Post-parturient dyspepsia was known in Lancashire as "slow fever," and the symptoms were no temperature, depraved appetite, and characteristic smell of the milk, which latter, however, some people could not detect. He had not met with balanitis or curd in calves in his district. It was his usual practice to wait until the cleansing came away from a cow without outside assistance. He thought the cotyledons were always present in the uterus, even when empty. He agreed with Mr. Stinson's procedure in sterility, but held the view that vaccine treatment had a tendency to induce sterility in an animal. Mr. Holroyd expressed the opinion that swelling of the joints after retention of the placenta and the condition known as felon, were two definite diseases. He would like to ask what Mr. Stinson did with pregnant animals on an abortion farm. With reference to the use of mag. sulph., Mr. Holroyd said 2 lbs. seemed to be a big dose, and there were few veterinary surgeons within his knowledge who gave such large doses. He thought that the 4 oz. doses of chloral hydrate, as given by the author, would put an animal on the floor, which was not the required effect, especially in cases of uterine eversion—the standing position being obviously the better one.

Mr. CURBISHLEY stated he would here like to add that in his opinion, pure glycerine was the best antiseptic that could be used.

THE REPLY.

Mr. STINSON, in reply, said he was sure his audience had been very kind to him. In reply to Mr. Ackroyd's question about removal of the cotyledons, one could take them away from the horns and body of the uterus without fear. He cited a case of double-sided dropsy of the uterus—the animal appeared to be dying and he inserted two fingers into the os, made three incisions of it, and got a lot of fluid away with a calf. The next day he found another calf and took that away. All the cotyledons of both horns were removed, and this cow afterwards produced a live calf. He never had any trouble in dilating the os and he thought it should be done more often than it was. Mr. Stinson expressed the opinion that the large doses (4 ozs.) of chloral were necessary to stop severe straining, which of itself might even kill a cow. He always gave big doses, but he realised that no matter what drug was being used one must understand what one was treating. He gave mag. sulph. in combination with treacle. In a case of milk fever a cow would very often rise after early administration of treacle or glucose, but he thought that mag. sulph. was very useful in these cases. Milk fever and dyspepsia were, in his opinion, opposite conditions. The smell in the milk of dyspepsia cases was similar to that noticed in persons suffering from diabetes. Swellings of the limbs he thought must be due to secondary infection, the primary infection being the bacillus of Bang or some other specific organism. In answer to Mr. Mayall's question regarding the administration of chloroform to cattle, he found that the best procedure was to put the sponge in the muzzle and withdraw it again, this being done repeatedly, thus ensuring a good mixture of air whilst at the same time bringing about satisfactory anæsthesia. In reply to Mr. Curbishley Mr. Stinson said that one might repeat the 2 lb. doses of mag. sulph. after 2½ days interval. By this time the effect of the initial dose had worn off and the bowels had become normal again. With regard to the operation for curd, he had only done it in calves, but would like to try the operation on a foal, though realising that the same results were hardly to be expected. Concerning Mr. Curbishley's question about the effect of a live vaccine in abortion and

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Progressive Dairying: The Veterinarian's Opportunity.*

By R. G. Linton, M.R.C.V.S., Professor of Hygiene and Dietetics, Royal (Dick) Veterinary College, Edinburgh.

Let me take this, my first, opportunity to say how greatly I appreciate the honour of being invited to speak to you in Ayrshire—the home of that most useful animal, the Ayrshire cow—on a subject connected with such an important industry as dairying. Let me hasten to add that I have accepted your invitation with the clear conviction that I am going to benefit from your discussion of my paper rather than that I am going to pass to you any new information. I have put myself in the position of one who says something with the primary object of drawing others out to talk from their accumulated funds of experience, and my paper has been framed with this end in view. I feel confident you will agree with me that no department of agriculture is so actively alive, so actively progressive, at the present time as the industry of dairying. There are many reasons, which one cannot touch on to-day, why it should still further progress and expand. There is reason, I believe, for optimism in dairying, notwithstanding the difficulties of recent legislation, but dairy expansion can only take place if costs in production are reduced. Reduction in costs means financial ability to produce cleaner and better milk; cleaner and better milk means increased consumption, and this in its turn will naturally call for increased production.

Costs connected with milk production other than that of the nutrition of the cow, may or may not be our problem, but there can be no doubt that the normal nutrition of the healthy cow falls within our province as advisers and helpers of the agriculturist. Our work is not merely to cure the sick animal, but to assist the stock-owners to maintain healthy herds, and, moreover, to maintain them on an economic basis. If we can help them to do this we shall be doing much to cement the bond of friendship already existing between agriculturist and veterinarian.

It is very much the fashion nowadays to speak from public platforms into the microphone, and to write articles in journals, on the feeding and management of dairy cows, but the voice of the veterinarian is seldom, if ever, heard. This seems to me strange, inasmuch as the average practitioner—at least in the country—spends the greater part of his working day correcting the digestive disturbances of cattle caused by erroneous dieting. Presumably, therefore, he has some information capable of benefiting the farmer.

It has been shown that the cost of feeding dairy cows accounts for something like 70 per cent. of the total cost of milk production, and as this is the heaviest item of expenditure, if we can help dairymen to reduce it we shall be doing good work. In the Report of the Departmental Committee on the Production and Distribution of Milk two records are given showing how much money can be saved by means of milk recording and by scientific feeding of the cows, as compared with the old and extravagant methods. In one case a saving was affected of £307 9s. in a herd of 60 cows during three winter periods, and in another case £149 14s. was saved in a herd of 40 cows during two winter periods. During last winter I was asked to ration a herd of 30 cows belonging to an institution. I found that the food cost 1s. 3d. per gallon of milk produced, the average milk yield being two and a half gallons per day. I reduced the food cost to 11d. per gallon and, I believe, improved the health and milking capacity of the cows. This change in dieting effected a saving of 17s. a day. I merely mention these cases to indicate that there is room for improvement in the methods of feeding in many herds, and to stress the point that the veterinarian really has a great opportunity to assist in the scientific progression of dairying by showing the farmer how he may reduce the cost of keeping his cows.

The feeding of dairy cows has to be considered in relation to the *quantity and quality of milk* produced, or which might be produced, the *health of the cow and her offspring*, and the *cost of the food materials purchased or grown* to produce the milk.

It is impossible in the time at my disposal to deal adequately with all the important details of feeding, but I shall endeavour to touch upon the most important of them, anticipating that the omissions will be made good by the discussion.

The old-fashioned method of feeding all the cows in the herd alike, irrespective of their milk yield, is fast giving place to the more scientific and more economic method of feeding each cow according to the milk she produces. It is nevertheless true that many dairymen still adhere to the older method and members of our profession can be of great assistance in explaining this new method to farmers in their district who are not familiar with it. Briefly, the modern system is as follows:—All the cows in the herd are given a basal or maintenance ration which is sufficient to maintain them in health without the production of milk or body-weight increase. In addition to this, each cow is given an allowance of concentrates of the right quality which experience has shown will supply the nutriment necessary for the quantity of milk she yields. The chief objection to the older method is that in a large herd with some cows producing four or five gallons a day, and some only producing one or two, it is clear that the heavy-producing cows will run a grave risk of being underfed, with the consequent falling off in their condition and milk yield, and, on the other hand, the poor producers will be getting more food than is necessary for them. It is obvious that this method is not sound, and it is certainly not economical.

Having decided to adopt the new method of feeding, the question is, how are we going to apply it?

In Britain the common unit of food measurement is an *equivalent of starch*, so many pounds of hay or so many pounds of cotton cake, etc., being said to equal so many pounds of starch for the purpose of meeting the physiological requirements of the body or for the purpose of producing milk. In human practice, as you are aware, the nutritive value of foods is expressed in calories. Starch equivalents may be looked upon merely as another way of expressing calories, 1lb. of S.E. being equal to 1,071 kilo-calories. Starch equivalents have come to stay, and I can see no useful purpose in trying to utilise any other method of expressing the same thing, as some people are doing, because the less confusing we can make the science of dietetics the more progress shall we make among the stock-owners, but we can never make it very simple.

Personally, I accept the finding and recommendations of the Departmental Committee on the rationing of dairy cows, and their report should be studied by all those interested in this matter. The Ayrshire cow weighing about 1,000lbs. is said to require 6lbs. of S.E. and 0·60lb. of digestible protein for her maintenance or basal diet, and for every gallon or 10lbs. of milk of average quality that she gives, she requires 2·5lbs. of S.E. and another 0·60lb. of protein.

Some people have tried to simplify still further proportionate feeding by stating that a cow should be given about 20lbs. of meadow hay for maintenance and 3½lbs. of concentrates for each gallon of milk. Unfortunately, this

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its effect on the milk yield, he found that the milk yield was effected. He did not think that the use of the serum or the vaccine was a cause of swollen joints. He wished to express his thanks to Dr. Hare for his remarks on the value of physiology, and agreed with what he said. He would try glycerine as recommended by Mr. Curbishley. He wished to thank his audience for their discussion; he had only tried to reply in a general way, and he would conclude his remarks by strongly recommending that the members should give a trial in their practices to his 2 lb. doses of mag. sulph.

* Presented to the Ayrshire Division at Ayr, March 30th, 1927.

very simple method is not sufficiently accurate to give the best results. It is true that 20lbs. of meadow hay will supply the 6lbs. of starch equivalent required for maintenance, but, in my opinion, 20lbs. of meadow hay is rather too much coarse fodder for a heavy-yielding Ayrshire cow when given in addition to the large amount of concentrates she must consume. Furthermore, 3½lbs. of concentrates will not always supply 2½lbs. of starch equivalent. For example, a mixture of bran, 2lbs.; bean meal, 1lb.; and flaked maize, ½lb., only supplies 1·9lbs. of S.E.

But there is another serious objection to the general adoption of 3½lbs. of concentrates per gallon of milk. Such a method fails to take into account that most important constituent of a cow's ration, the protein, though it is true that if a ration is compounded of several foods, as all cows' rations should be, it is not likely that the diet will be seriously at fault. But at the same time it is as well to be as accurate as we can. If a full-yielding pregnant cow is to maintain her health, and give a good yield during her lactation period, she must have a proper protein supply in her diet, and this cannot be assured by guessing. Indeed, in some instances too much protein is given, which is neither to the benefit of the cow nor of the owner's pocket.

Equally important with the foregoing is the question of bulk. You are all familiar with the cow and the fattening beast that is over-fed with coarse, bulky and relatively innutritious food, and how often such animals suffer from indigestion and impaction, particularly if the water supply is unsufficient or given in a spasmodic manner. Obviously there must be a minimum supply of bulk that could with safety be given to dairy cows and also a maximum amount, and between these extremes there lies the optimum amount. I believe this optimum quantity is best expressed by saying that a cow in full milk, say from three gallons upwards, requires total dry matter equal to about 2½ per cent. of her live weight per day. I am looking forward to hearing your views on this question of bulk, particularly as I have recently been told that an Ayrshire cow cannot consume as much as 3½lbs. of concentrates per gallon of milk. This has not been my experience.

We now have, therefore, three important factors governing the construction of the cow's ration—total nutriment expressed as starch equivalent; total protein, and bulk. If each one of these three is correct, I do not think that the diet could be very far wrong provided that it consists of a mixture of concentrates, and is not too rich in one or two, and that mineral deficiences are made good by including in the diet some bone meal or fish meal. The following ration is an example for a cow producing three gallons of milk daily:—

		S.E.	Protein.	Dry matter.
Rye grass hay ...	14lbs.	5·04	0·85	12
Bruised barley ...	3 ,,	2·13	0·28	2·58
Bruised oats	4 ,,	2·44	0·32	3·48
Dect. ground nut cake	1½ ,,	1·06	0·63	1·35
Flaked maize	1 ,,	0·82	0·08	0·87
Swedes	30 ,,	2·10	0·22	3·68
		13·59lbs.	2·38lbs.	23·96lbs.

The standard requirements for three gallons of milk being starch equivalent 13·5lbs. and protein 2·4lbs., this ration is therefore suitable in these two respects. As regards the bulk of the diet, 2½ per cent. of 1,000lbs. (the average weight of an Ayrsnire cow) is 25lbs., and as this diet contains 24lbs. it is clearly not more bulky than is desirable.

Then there is the question of the selection of foods. Among the great variety of foods from which to choose, which is the feeder to select and what should be his guiding principle when making his choice? Of the coarse fodders, hays and straws, I think that straw had better be left out of the *heavy-producing* cow's diet unless the hay available is of poor quality; then, and I think only then, should oat straw replace it. As average oat straw, weight for weight, has only half the nutritive value of hay (there are exceptions to this statement) it follows that twice the bulk of straw will have to be consumed in order to get the same amount of nutriment, or else the deficiences of the straw will have to be made good by increasing the concentrates in the diet. It is of course well recognised that good oat straw is better than bad hay. Of the hays, those made from leguminous crops, such as lucerne or clover, rank first in their utility for dairy cows owing to their high content of calcium, the cow's average diet being deficient in this mineral.

In regard to the choice of concentrates, provided that several concentrates are used (a mixed diet being always better than a restricted one), provided also that the foods are palatable and that they do not have an undesired effect upon the butter-fat, making it too soft or too hard, then I think that the choice should be governed chiefly by their relative prices, and it is on the cash value of foods that I wish particularly to speak this afternoon. I wish to do this because I believe that great economy can be affected in the production of milk by carefully studying market prices and then buying foods according to their relative prices per nutritive unit. Some stock-owners purchase a food because it is cheap per ton, others because they have always used a particular food and like it, without having any special reason for so doing, while another group purchase certain concentrates because they are induced by an agent to do so. Now, in the first place, the price per ton of a food is often misleading; in fact, it is seldom a guide to its real value.

In general, specific foods are given to stock for one of the following reasons:—(*a*) Because they supply bulk to the diet; (*b*) because they contain a large amount of digestible nutriment such as carbo-hydrate; (*c*) because they are rich in protein; (*d*) because they contain a lot of minerals; and (*e*) because they are succulent foods. This being so, feeders should obviously select the cheapest foods from each of these groups (provided of course that they are otherwise suitable).

In the case of coarse fodders and carbonaceous foods, it is clear that those having the highest starch equivalent value for the same price per ton will be the cheapest foods to buy. Every month there is given in the *Journal of the Ministry of Agriculture and Fisheries* a list of foods, their prices per ton, their starch equivalents and their prices per unit of starch, and stock-owners should make full use of this information. But as local prices are not necessarily those quoted by the Ministry, I have obtained from my friend Mr. Alex. Douglas, the prices in Ayr of some of the more common foods for the purpose of clarifying my remarks. For instance, in Ayr, hay averages 65s. per ton and oat straw 33s. Now, the starch equivalent of rye grass hay is 36 and that of oat straw 17; if, therefore, we divide the starch equivalent into the number of shillings per ton asked for the food, we shall get the price per unit of starch, which indicates the real value of the food. At the above prices, hay costs 1s. 9½d. per starch unit and oat straw costs 1s. 11¼d. It is obvious, therefore, that though the cost of straw per ton is practically half that of hay, it is, in fact, a dearer food to purchase. As a matter of fact, it is still dearer than appears from this calculation because it only contains 1 per cent. of protein, whereas hay contains 6 per cent.; therefore some additional protein would have to be purchased to make good this deficiency.

Among carbonaceous concentrates the feeder has a wide range from which to make his selection. To take three from the list for the purpose of illustration, bran, maize and oats. Bran is quoted at £8 15s.; maize at £8 10s.; and oats at £7 10s.; at these quotations the prices per nutritive unit work out at 4s. 2d. for bran, 2s. 1d. for maize, and 2s. 5½d. for oats. Though the price per ton of bran and maize is practically the same, actually, bran is twice as dear, and therefore, at these prices, where is the advantage in buying bran for cows?

In the case of nitrogenous concentrates bought primarily for the purpose of increasing the protein in the diet, it is

clear that it is the price per unit of protein that we need to ascertain and not the price per unit of starch. For example, decorticated ground nut cake costs, according to present market returns, £11 15s. per ton, and decorticated cotton seed meal £9 10s. per ton, but the price per unit of protein for these two is exactly the same, namely, 5s. 7d. per unit. Therefore ground nut cake at £11 15s. a ton is not any dearer in actuality than cotton seed meal at £9 10s. a ton. For the sake of simplicity, I have purposely omitted any calculations for the manurial value of residues.

From what I have said I think it will be clear that selection of foods according to their real value is a practice well worth the most earnest consideration by owners of dairy herds, because the intelligent use of foods is bound to result in cheaper milk production.

One could not leave this interesting subject of feeding cows without referring to the much-discussed topic of the use of roots. I fail to see why roots should be excluded from a cow's diet. As a hygienist I long ago became convinced that the truth of an argument lies at neither end of it; as a rule it is to be found somewhere near the middle—as far from the extremists as possible. You will agree with me, I am sure, that to give a cow a hundredweight of roots a day is unwise, but I quite fail to see any objection to allowing her 30 or 40lbs. a day. All herbivorous animals crave green or succulent foods, and do we not ourselves welcome the first lettuce of the season? Succulent foods, such as grass, roots and cabbages possess a nutrient value that cannot be expressed in figures and, in my opinion, the reasonable use of succulent foods in the winter is a practice to be commended. As to the economy of growing roots specially for cows, this is a matter on which only the farmer can decide.

If the vitamin doctrine is sound, swedes at any rate must have a beneficial effect on the cows, improve the vitamin content of the milk, and thus enhance the value of cow's milk for children. And this has brought me to a topic I should like to have avoided, namely, the vitamin content of cows' milk. We were advised over the wireless the other day to buy New Zealand butter during the winter because, being produced from grass-fed animals, it is richer in vitamins than our winter-produced butter. Personally, as long as I can get plenty of certified milk, fresh butter and fruit for my children, and give them plenty of exercise in the fresh air and sunlight, I am not worrying very much about the vitamin content of the milk and I doubt the wisdom, or the necessity, of worrying the dairymen about them. They surely have enough trouble as it is.

In my opinion, what we want is more milk, cleaner milk, cheaper milk, and milk produced by cows kept in the country, and which is cooled and bottled on the farm. I may be unorthodox, but I believe that if we are going to worry the dairymen about elusive vitamins we shall be doing something that is not worth the doing and which certainly will not help towards reducing the costs of milk production.

At the conclusion of the address, Mr. W. GARDNER, chairman, said: I think you will all agree with me that we have had a very interesting paper, and a thorough exposition of the subject of "Progressive Dairying."

Professor Linton has provided adequate material for discussion, which I trust will be a good one. I was hopeful that Mr. David Weir would have opened the discussion, but, unfortunately, he was reluctantly compelled to decline the invitation owing to pressure of time. Alternately, our choice fell upon Mr. Alex. S. Douglas who, since receiving notice, has been laid aside with influenza, but he has kindly sent his assistant to read his comments, which we shall be pleased to hear now.

DISCUSSION.

Mr. TAYLOR then read Mr. DOUGLAS' remarks in opening the discussion, as follows: I have two regrets regarding the opening of this discussion, and these are, first, that it is not being opened by a practitioner to whom, primarily, Professor Linton addressed his remarks, and secondly, that I very much regret that I am unable to open the discussion in person, but influenza is no respector of persons and I have been reluctantly compelled to absent myself. I have prepared these few notes which I hope will open up an interesting discussion on what, I am sure you will agree, has been a most interesting paper, for the submission of which we are deeply grateful to Professor Linton.

Progressive dairying is a subject with many aspects, and, while Professor Linton has regarded as the veterinarian's opportunity that aspect of the question which he has made his own special study, there are other aspects of progressive dairying in which the average veterinary surgeon will naturally take an interest. As there is ample scope for discussion within the limits of the paper submitted to us, the other aspects may be, for to-day, disregarded. I think we will all agree with the essayist that in many cases the system of feeding adopted is an extravagant one and not infrequently actually harmful. In our inspection of the herds under the Milk and Dairies Act the constituents of the rations have been noted, but I regret that I have not had time to tabulate the results of that enquiry. The question of quantities fed is, as a rule, not accurately considered, and only in a small minority of cases is there a definite system of feeding the cow in accordance with her milk yield, though I think I have reason to state that this minority, small though it is, is gradually increasing.

Now let us come to some particular points in the paper, Professor Linton may be surprised to know that straw is used as a fodder on a large percentage of Ayrshire farms and in many cases is fed *ad lib.*

Before going on to the question of concentrates, I would like for a moment to mention roots. Professor Linton sees no objection to allowing a cow 30 to 40lbs. of roots per day, but he suggests that 1 cwt. per day is unwise; with the latter statement I think we will all agree. The wastage in cows in the Stewartry and Wigtownshire, which is laid to the blame of enormous root rations, is well known to all of us. I am sorry Professor Linton did not mention silage in his paper. The number of silos in Ayrshire is not very large, but it is increasing, and I, personally, would have been glad to have heard his views on the value of silage as a substitute for roots, as in connection with roots there is always the question of the cost of growing them specially for cows. It is generally accepted that 6lbs. of standard silage, that is, silage containing 30 per cent. dry matter, is equal to 10lbs. of roots. Those owners of silos with whom I am acquainted are well satisfied with their results, though I am doubtful if some of them have gone very thoroughly into the economic aspect of the question. The one great advantage which I see in silage is that it is a source of succulent food all the year round if desired, and I think we, as veterinary surgeons, should do all we can to encourage the use of some succulent food during the winter, whether it be silage, roots, or cabbage.

Now regarding concentrates—to begin with, there are two meals mentioned in the paper which are not used for dairy cows in Ayrshire, and the one most commonly used is hardly mentioned at all. The two which are not used are bone meal and fish meal, and the one which is used in a greater or less degree on, I am sure, the majority of Ayrshire farms, is bean meal. Professor Linton mentions the desirability of using a mixture of concentrates and we find in Ayrshire that what might be termed the more progressive farmer is using a much more varied ration than formerly. The advantage of a varied ration is borne out in a report published some time ago by the Director of Agriculture for East Sussex who stated that, other things being equal, it seems certain that the varied ration will give better results and that the milk yield will show a remarkable relation to the *number* of different feeding stuffs used.

In connection with the ever-popular bean meal, as this is a food rich in protein its value must be considered against similar foods. Professor Linton shows that decorticated ground nut cake and cotton seed meal cost

5s. 7d. per unit of protein, while bean meal at its present price costs more than double that as the percentage of digestible crude protein in beans is 20 per cent. against 36 and 42 in the other two feeding stuffs just mentioned.

The great difficulty with which a farmer has to contend in making out an economical ration is that he must maintain, as far as possible, a balanced ration with an albumenoid ratio of 1 : 4·5.

In connection with the consideration of a balanced ration, I have found most useful an article which appeared in the *Journal of the Ministry of Agriculture* for November, 1925, by two officers of the Hertfordshire Institute of Agriculture.

There is one aspect of the feeding question with which Professor Linton has not dealt, and with which some of you may be able to deal, as it is closely related to the question under discussion, namely, the value of particular foods in the ration from the point of view of quality production rather than quantity production. Personally, I suspect that the marked preference of Ayrshire farmers for bean meal has something to do with this aspect of the question.

Let me, in closing, again express my regret at being unable to be present to welcome Professor Linton on his first visit amongst us, and to hope that you will have an interesting discussion and an enjoyable meeting.

Mr. D. WEIR said there was one thing he had noticed in his experience and that was that the concentrates fed in Ayrshire preponderated and that it would be better to increase the fodder or bulk ration. There was always the danger of overfeeding with concentrates. He was of opinion that feeding could be done more economically than was the case in that part of the country.

Mr. H. GILLMOR remarked that what had struck him was that the farmer was inclined to give too much concentrated stuff, and too little hay and straw. Ayrshire cattle would not stand as much as would the black and white breed. Ayrshire's were peculiar and seemed to need a diet of their own.

Mr. R. SMITH said that in some parts of Ayrshire roots looked like being dispensed with. In his own district water bowls had been introduced and they seemed to be serving the purpose of roots to a great extent. If the vitamin question was left out, then water *ad lib* should supply the purpose of roots. As regarded concentrates, throughout his district farmers were feeding on the rationing system, otherwise milk could not be produced to give a return.

Mr. FORKER suggested some system whereby the farmer would be advised of the values of the food he gave to his cattle. At the present time the farmer had no indication of the unit value of foods.

Mr. ALEXANDER directed attention to the difference in cows, which would require to be considered in a rationing system. He mentioned that beet pulp had been used a good deal in some parts last year and he knew one farmer who, since using it, had stopped turnips entirely.

Mr. MCGREGOR, JUN., stated that he was a great believer in a plentiful supply of water for the cow as it enabled her to digest more of the concentrates and a better result was produced in the pail.

Mr. BROWN mentioned that in his essay Professor Linton preferred hay to straw, but in his part of the country many of the farmers who grew early potatoes grew no hay, and the cows were fed on oat straw *ad lib* along with concentrates and they did very well. One thing that struck him, which might not be just in keeping with the paper, was the danger of work which should be in the hands of the veterinary surgeon passing to professors of Agricultural colleges. He instanced a case in his district where, at a creamery with 50 farmers' milk going in, there was trouble about the milk being bad, and a professor of the Agricultural college was sent for, who took samples of the milk to find the source of the bad milk, and who then followed this up to the farms and examined the cows, which was the duty of a veterinary surgeon and not of an agricultural college professor.

The CHAIRMAN agreed that producers should have a knowledge of the nutritive value of foods, as that was very important if they were to feed well and economically, but the knowledge of the nutritive value of a food was not complete without knowing its digestibility. He thought that in the feeding of dairy cows the knowledge of basal facts, combined with ordinary intelligence reasonably applied, and consideration of detail (which quickly developed into routine without undue increase of labour), were capable of accomplishing more than the ordinary producer appreciated. That method of feeding according to production was absolutely on the right lines.

He agreed that the truth of an argument was to be found somewhere near the middle. The faddists said that cows did not need turnips because there was no virtue in them. He thought roots were a most useful diet for cows, particularly mangel and swedes; their chief value being in the fact of their containing a readily digestible carbohydrate, starch and sugar. Let them take to feeding of animals on full grass—they found that they throve more quickly if they had an allowance of turnips.

In reference to bulk, it was necessary to induce mastication, which was essential for the performance of digestive functions. It was perfectly impossible to keep up condition and vigour on concentrated foods alone. The intestines must contain a certain amount of bulk to assist digestion and assimilation.

Nothing had been said about the feeding of "dry" cows, which, he thought, was very important if one wanted to get up to the five, six or seven gallons per day cow with milk of good quality. One could not expect to get good results out of a machine which was not ready to run. He did not find that palm nut cake ranked very high in the estimation of dairy farmers for feeding heavy yielding cows. At £9 5s. per ton it was too dear. It was very useful for feeding the yield cows. He found that decorticated ground nut cake, 53 per cent., stood unrivalled in the opinion of producers in his area and was better value at £11 15s. delivered than other similar commodities. He was no lover of the much-praised bean meal diet. He thought its value was over-rated and at £12 15s. per ton it was too dear. Many farmers sold their bean crop and bought in other feeding materials, with good results.

Regarding vitamins, he did not think they should worry the dairying industry with that question. The market for their produce was at home, but, they had not got it—producers and consumers were too much at the mercy of the milk dealer.

The public did not consume enough milk; they did not realise the value of milk in their own interests. Milk was a valuable daily commodity, and a plentiful supply of cleanly kept milk was a decided economy. He was firmly of the opinion that if consumers were convinced as to that, and the excellent hygienic principles prevailing in milk production in that county of theirs, that had bred, and which was housing some of the best dairy cows in the world, they would turn a deaf ear to that propaganda cry "Buy New Zealand Butter" and consign that pamphlet "Hidden Perils of Milk" and all varieties of tinned milk—to the waste paper basket.

THE REPLY.

Replying on the discussion, Professor LINTON made some further interesting remarks and suggestions. He recognised, he said, the importance of bulk feeding—there must be an adequate amount of bulk in all rations, whether for the animal or the human being. Giving an example of wrong feeding of dairy cows, the Professor said that some farmers would feed them by putting down the fodder, hay or straw. The animals were hungry and ate it up satisfying the demand of the stomach. Then someone dished out a heavy allowance of concentrates, they ate this food also because they liked it—it was greed simply. In this way cases of over-feeding occurred. If they changed it round, gave the concentrates first, the proper allowance properly distributed, and after that the bulk feed the

(Continued at foot of first column next page.)

The Veterinary Record.

4th June, 1927.

STOP PRESS.

Royal College of Veterinary Surgeons.

Annual Election of Council.

The following result of the R.C.V.S. Council Election was announced at the Annual Meeting of the R.C.V.S. on Thursday :—

The following have been elected Members of Council :—

Name.	*Votes.*
O. Charnock Bradley	929
J. F. Craig	889
S. H. Gaiger	879
A. Gofton	865
G. P. Male	804
J. W. McIntosh	755
A. W. Whitehouse	640
J. Holroyd	541

The unsuccessful candidates were Messrs. Powley, Howard, Rabagliati, Levie, and Wall.

(*Continued from previous page.*)

animals would simply take what they required. Silage, he maintained, was one of the greatest boons the farmer was going to have in this country, and we were far behind America and Canada in this respect. They should encourage the use of silos—silage could be fed at any time of the year ; it gave excellent results and he did not know of anything to be said against it. It was one of the things that was going to become popular in this country, and one that would help dairying more than anything else he knew. He was sorry to hear that bone meal and fish meal were not used in Ayrshire, as they had excellent results in the feeding of dairy cows. Beet pulp was all right, but should be given in the proper proportion with other foods.

The Eradication of Bovine Tuberculosis.

A Socratic Dialogue.

By Lieut.-Col. J. W. Rainey, C.B.E., M.R.C.V.S., London.

That which follows is an attempt to imagine the form that might be taken by a discussion between Socrates and Henry Gray on some points contained in his interesting and forceful article on the Eradication of Bovine Tuberculosis, published in the *Veterinary Record* of May 28th.

Socrates. I am pleased to have this opportunity of meeting you, Sir, and (if you will be so kind) of enlightening myself further concerning the subject of your recent discourse. I am walking towards the city and I observe that your steps also tend thither ; may we not converse as we go ?

Henry Gray. By all means, and if I can assist you to a better understanding I shall be gratified.

Soc. I was sure that you would wish to help me. In the first place, where you say that the Tuberculosis Order of 1925 has been a "sheer waste of money," do you mean that no good at all has been or will be done by this Order ?

H. G. My meaning is, I think, evident from my words ; they are not ambiguous.

Soc. I know little of this matter, so perhaps it will be best (if you can be so indulgent) if we begin at the beginning ?

H. G. Certainly.

Soc. Is it true that the common source of bovine tuberculosis is the tuberculous cow and that the common source of human infection from bovine sources is the tuberculous udder ?

H. G. Yes, of course.

Soc. And that the more diseased a cow is, other things being equal, the more infectious she will be ?

H. G. Yes, but that is surely an unnecessary question.

Soc. If a cow is obviously diseased she will, as a rule, be extensively diseased and will thus be an especially dangerous source of infection ?

H. G. Yes, as a rule.

Soc. The fewer obviously and therefore extensively diseased cows there are, the fewer will be the gross sources of infection ?

H. G. Yes, but note this : in a byre let a source of infection, which we may call *alpha*, suffice to infect all the susceptible cows in that byre, and let that source—*alpha*—be represented by one or more cows extensively but not obviously diseased, then the elimination of an obviously diseased cow, which we may call *beta*, will not necessarily influence the spread of the disease within that byre ; therefore, the cost involved in the elimination of *beta* is a sheer waste of money.

Soc. That is an important observation, but would this state of affairs be invariable ?

H. G. Perhaps not invariable, but usual.

Soc. You scientists have a phrase, "massed infection," which I believe connotes a particularly plentiful and dangerous source of infectious germs : might such be represented by an obviously tuberculous udder as the sole source in a byre of infection, at any rate for human beings ?

H. G. It is possible.

Soc. You have succeeded in eliminating altogether in your country certain diseases, *e.g.*, rabies, pleuro-pneumonia and glanders, and in doing so have gained much experience ; is not the first measure of control in every instance the detection and destruction of the obviously-diseased animal, and was it not formerly possible, for example in glanders before the discovery of mallein, to control the disease to some extent by this means alone ?

H. G. Yes, but tuberculosis is different, in its frequent lack of obvious or clinical manifestation of its existence, from any of the diseases we have eliminated.

Soc. I am well answered, but is it not better to take the first step than to take no step at all, and in regard to the obviously diseased animal is there not reason in the light of all your experience of control of infectious disease to

suppose that a reduction in the extent of the gross sources of infection may be met by some reduction in the spread or the intensity of the disease ?

H. G. I think I must concede these points.

Soc. Then you do not mean by the phrase " sheer waste of money " that the money has been and will be *entirely* wasted ?

H. G. What I mean is that if the object of the Order is the complete or even the considerable elimination of bovine tuberculosis, then the Order of 1925, which cannot possibly fulfil that object, involves a waste of all money expended under it, but that if the object is merely a degree of suppression of the sources of infection, *i.e.*, the first step is a system of control that will later on be rationally pursued, then my phrase, " sheer waste of money " is not truly applicable.

Soc. Thank you, my friend : I am now much enlightened ; our conversation seems to me to make it clear that the relatively small amount of money which our administrators consider can presently be spared for the control of bovine tuberculosis is not perhaps being entirely wasted : let it, at the least, be regarded as the cost of the first step and an earnest of a more rational procedure in the future.

We shall doubtless also agree, without discussion, that America is far better able than ourselves at the present time to provide money on a great scale for public health purposes and that the Channel Islands, in point of taxation, are in a similarly favoured position.

H. G. Be that as it may, I believe that expenditure of money, however great, upon the eradication of bovine tuberculosis on rational lines would be a good national investment, even at the present time.

Soc. You may be right, Sir, but we are now arrived at the city and I must forego the delights of further converse with you : in part I am reconciled to this abrupt ending of our communion by the reflection that a discussion of the financial side of this question between us, who are not accountants or bankers, or indeed versed in any large sort of commerce, would be fruitless.

Local Authorities and the Humane Killer.

Loughborough Rural District Council recently received a memorial, signed by about forty justices in the Loughborough Petty Sessional Division, in favour of the adoption of a bye-law enforcing the use of the humane killer.

Mr. Howard Coltman thought they ought to get more information on the subject. It was so easy to be led away by sentiment, and to come to a wrong decision after hearing only one side. It had not been clearly shown that the new method was more humane than the ordinary method. At a recent conference of market authorites at Nottingham a paper was read by the chief veterinary officer of Birmingham, showing that there were many drawbacks with the humane killer.

Mr. Coltman said the Markets Authorities Association, which included all the large markets of the country, sent out a questionnaire to 110 authorites, 87 of which replied. Of these 77 had not adopted the bye-law : four had adopted and enforced it : two had adopted, but not enforced it, and three had adopted it for beasts only and not for sheep and pigs. About 160 authorities had adopted it, but these were little rural or urban districts, with perhaps a couple of slaughter houses. He had yet to hear of a big industrial area which had adopted it.

Sir Edward Packe said he imagined that cruelty arose through inexperienced hands doing the work.

The Clerk said no doubt in the big areas there would be more experienced men.

It was decided to obtain copies of the report referred to by Mr. Coltman.—*Loughborough Herald.*

CLINICAL AND CASE REPORTS.

Tuberculosis of the Œsophagus in a Cow.

By S. E. Sampson, M.R.C.V.S., Hillsbro', Sheffield, and Wm. Tweed, M.R.C.V.S., D.V.S.M., Town Hall, Sheffield.

Subject. A dairy cow of the good milch type, 3rd calver. The above cow was reported to the City Veterinary Department under the Tuberculosis Order, and was then examined by Mr. Tweed and was slaughtered under the Order as a case of emaciation due to tuberculosis.

History. She was purchased, about a year ago, newly calved and for a few months she fed and milked well. About six months ago she began to eject the bolus when eating hay as if she was suffering from tooth trouble. The owner did not call any veterinary advice although the ejection of the bolus continued when the hay ration was given. Sometimes her manger would be covered with the chewed material, and at other times very little was ejected. The owner later stopped giving her hay as she seemed to be able to chew the cud and swallow other soft foods without much difficulty. Her great desire to eat hay was very marked when she was fed on soft food only, and when given it she could only swallow a few mouthsful until she commenced to eject it. In the words of the owner " it was amusing to see her when turned out to drink, she would steal some hay from the hayrick, chew it and then, when sent to the water trough, would drink and immediately put her nose high in the air and vomit a spray of water back again." Later, slight tympany and diarrhœa were shown intermittently during the course of the disease. A month ago she calved and never seemed to recover in health, her appetite was diminished, and she lost condition.

Trachea (with lungs removed) the mediastinal glands and œsophagus, showing their relative position. Note the extent of the tuberculous lesion in the thickened bottom part of the œsophagus.

Mr. Sampson's advice was then obtained and he passed the smaller end of the cattle probang. Difficulty was experienced when the instrument was passing the region of the mediastinal glands and, although no distinct stricture of the œsophagus could be detected, a very strong suspicion remained in the operator's mind that such a condition existed. A very unfavourable prognosis of the case was given.

On *post-mortem*, tuberculosis was confirmed and, as shown in the accompanying photograph, revealed tremendously enlarged bronchial and mediastinal lymphatic glands. The most posterior mediastinal gland measured 9in. by 5in., and the total weight of the above glands was 6 lbs., 2 ozs.

The œsophagus was affected over a length of 8 inches where it passed adjacent to these glands. The muscular wall was infiltrated with small caseous tuberculous nodules, some of which caused elevations in the mucous membrane on the inside. On the mucous membrane itself there was one small ulcerated area which communicated with a nodule in the wall. It was contaminated and pustular and would soon have become a fistula through the wall.

The lumen of the œsophagus was not much decreased in size, except that firm adhesion had taken place between the œsophagus, adjacent glands and part of the upper borders of the lungs; in fact, at one situation it looked like one inseparable mass of tuberculous tissue, so that the normal distention of the œsophagus was no doubt interfered with. The lungs had each caseous areas at their upper borders where adhesion with the œsophagus had taken place, but the remainder of the lungs was free from tubercle areas.

The remainder of the carcase was free, except the adjacent hepatic and intercostal lymph glands.

This case is interesting because enlargement of the mediastinal glands causing recurrent tympany from pressure on the œsophagus is frequently met with in cattle practice. Tuberculosis of the œsophagus has seldom been mentioned in veterinary literature, and it would be interesting to note if this condition is often met with in conjunction with excessive enlargement of the mediastinal glands or *per se* from tuberculous infection from injuries, etc. In this case the tuberculous lesions in the carcase were confined to this particular area. The lesions, however, were all of old standing, and it was impossible to judge whether the œsophagus became infected first, with resulting infection of the lymphatic glands, or whether the adhesion with tuberculous tissue caused the spread of the disease to the œsophagus.

Notes on an Outbreak of Bacillary Necrosis in Hounds.

By E. R. Smythe, M.R.C.V.S., Falmouth.

Since the descriptions of outbreaks of this disease in dogs are few in number, and as the literature on the subject is not plentiful, a report of an instance which recently occurred in this neighbourhood may be of interest to your readers.

The infection became evident amongst a pack of hounds about six weeks before the termination of the last hunting season. These hounds were hunted two or three days a week and altogether six and a half couples became involved.

The first animal to be affected was a working hound and the primary symptom noted, on returning from a day's hunting, was swelling of the eyelid and orbital region. The kennelman applied what he considered to be the appropriate treatment, but the condition retrogressed, suppurating and discharging within ten days.

Six couples occupying the same kennel became lame, developing sore feet, thus suggesting that the disease was of a very contagious nature. When we were called in, the disease was in several phases of its development. The hound primarily affected had a large sinuous, necrotic wound on the orbit, discharging a blood-stained, dirty-coloured pus; the eye was completely occluded by a swelling which was continued down to the glands of the throat.

The other six couples all showed foot lesions involving one foot and sometimes two feet. These were all very lame and mostly carrying one foot. Other regions of the body were not involved, save in two cases, and of these one hound had a lesion on the shoulder and the other lesions on the thigh and hock. The digits and the pads were both affected, the condition being more serious in the latter.

The symptoms observed were lameness, swelling (which extended up the leg), marked redness of the skin, pain, abscess formation and sloughing of the part leading to deep, sinuous wounds with much discharge—in some cases the whole of the pad sloughed away, leaving a deep, necrotic wound, with exposure of the bones. These wounds continued to discharge freely and showed little natural tendency towards repair.

The treatment adopted was first to examine each hound in order to separate the healthy from the affected. The former, consisting of about twenty couples, were placed in fresh kennels and a foot trough was so constructed that hounds on entering and leaving these kennels were compelled to wade through a medicated solution containing "Feeto" in fairly strong concentration. No fresh cases occurred in these hounds.

In the diseased ones all the loose necrotic tissue was removed, the sinuses laid open, and a strong solution containing iodine and carbolic acid applied twice a day for a week. This procedure was painful and somewhat drastic, but very effectual, as at the end of this period the wounds appeared free from discharge and quite healthy, with granulating surfaces.

The treatment now adopted was to arrange foot troughs containing a solution of cupri sulph. through which hounds were made to walk. At the end of a month all the hounds save two had recovered and their feet were sound; the two exceptions were those in which the pads had necrosed and sloughed, causing them to become 'dropped toed' owing to the loss of the digital arch. In all probability this will incapacitate them from hunting again.

During the outbreak the general health of the hounds was but little disturbed.

The cause of the disease was probably an infection entering through wounds resulting from scratches or pricks obtained whilst hunting.

Since the *Bacillus necrophorus* has a wide distribution in nature, especially on cultivated soil, it is easy to imagine how primary infection might occur; but were this the source one would expect to meet with cases more fre-

quently during the course of practice; it seems more probable that the pus from the first hound affected contaminated the kennels and was the source of infection in the other hounds.

In conclusion, it may be stated that smears of the pus, examined microscopically, showed a mixed infection—short rods and filaments were present, presenting a morphology similar to that of the necrosis bacillus.

Oleander Poisoning in Cattle.

By G. W. STURGESS, M.R.C.V.S., Government Veterinary Surgeon, Colombo, Ceylon.

[In forwarding the following communication, Dr. G. D. Lander writes:—"Mr. G. W. Sturgess, Government Veterinary Surgeon, has very kindly sent me notes of a case of oleander poisoning of a cow in Ceylon. Although mainly of tropical occurrence, these notes may interest your readers.

"Mr. Sturgess' observations emphasise the action of oleander on the small intestine, which has been pointed out by other observers, but the more serious toxic action of the oleanders is ascribed to glucosides of the pharmacological type of digitalis.

"Mr. Sturgess also informs me that suspicion attaches to Para rubber (*Hevea brasiliensis*) of which large plantations exist in Ceylon. Fatal results appear to have been reported as the result of animals (cattle and dogs) drinking 'latex' or eating seeds. Mr. Sturgess says: 'Inspectors have reported that the death of cattle in some instances has been due to suffocation by balls of coagulated latex and chewed leaves in the gullet.' Having regard to the nature of rubber latex, it would appear that it acts as a mechanical poison. Further information is desirable."]

On March 3rd last, I was consulted by Mr. L. Walles, a veterinary practitioner in the town, with reference to a cow under his treatment.

She was off food and a little dull—had a tucked up appearance; temperature 102° F.; passing thin fæces mixed with a considerable quantity of clear mucus resembling boiled starch. No pain or straining. The symptoms presented did not point to any ordinary cause and the nature of the illness was puzzling.

Growing near the shed was a large bush of oleander (*Nerium odorum*) and several other oleander bushes in the same garden to which the cow had no doubt been tied. There were signs of shoots having been broken off. Oleander poisoning was therefore suspected.

A dose of sesame oil and small doses of tincture opium, turpentine and camphor were administered, and chalk and powdered catechu powders prescribed in gruel. On the 5th March there was considerable hæmorrhage and mucus with the fæces. Tannic acid, chalk and opium powders were prescribed. On the 6th the fæces were almost entirely blood clots of a peculiar nature—long fibrinous clots—six inches or over, the thickness and shape of the small intestine. So profuse was the hæmorrhage on 5th and 6th that one thought recovery impossible. Evidently oleander powerfully affects the small intestine.

On the 7th, less blood, with more fæces mixed with it, was passed and consistence more pasty. Treatment the same.

(Continued at foot of next column.)

TRANSLATION.

Canine Tuberculin.

By M. LESBOUYRIES.

The use of canine tuberculin in diagnosing tuberculosis has shown us that the application of crude tuberculin to the epidermis produced in the tuberculous dog eruptive, vesicular, impetiginous reactions, while it caused no lesion in tuberculous bovines.

It was difficult for us to interpret these facts. But Dr. Kfouri, who is doing interesting research work at the Alfort School on tuberculisation by endobronchic bacillary injections, has made it possible for us to test the value of the reaction caused by the application of canine tuberculin to the epidermis.

Of four horses tuberculised experimentally, two were inoculated on November 10th, 1925, with human bacilli, one receiving 6 centigrams, the other 3 centigrams. The other two horses on November 12th received an injection of bovine bacilli, one of 7 centigrams, the other of 3 centigrams. All four horses had reacted positively to the subcutaneous injection of 2·5 cubic centimetres of ordinary tuberculin, *i.e.*, human-bovine diluted to one-tenth of its strength, and to the intradermo-palpebral injection of one-tenth cubic centimetre of diluted tuberculin, when on January 16th, 1926, we subjected them to cutaneous applications of canine tuberculin. This operation was performed on the frontal region, which had previously been shaved; in order to allow the slight irritation caused by the razor to subside, a lapse of two days after depilation was allowed before the cutaneous surface was painted with canine tuberculin.

From the 18th hour after application of the tuberculin, the skin, in the two animals infected by human bacilli, was hot, thickened, swollen, eruptive; then very fine vesicles formed, burst, and gave out a citrine serous discharge which coagulated in yellowish crusts, of impetiginous appearance, the thickness of which increased until it reached 6 or 7 millimetres; the central part of the crust was raised by abundant exudation. These cutaneous lesions, remarkably apparent, persisted for about 20 days, then the crusts fell, leaving the skin shining and swollen. The cutaneous reaction was so marked that several weeks later the skin was covered with an abundance of very fine hair, much darker in colour than the hair of the neighbouring healthy regions.

While cutaneous post-tuberculin manifestations are violent in these two animals, they are, on the contrary,

(Continued from previous column).

Improvement continued and blood disappeared from the fæces on the 9th, when her condition became practically normal. Complete recovery followed.

I have experienced a case previously. In this instance the oleander bushes were clipped and a cow ate some of the clippings. This was witnessed. She became very stupid and depressed, refused all food and water—later, practically insensible and died next day. Evidently a large dose was consumed.

discrete and fugitive in one of the two animals infected with bovine bacilli, and do not appear at all in the other.

As for healthy horses, used as controls, they support without the slightest harm cutaneous applications of crude canine tuberculin.

From this experiment we may conclude that impetiginous dermatitis is characteristic of tuberculous infection, or rather of infection due to the human bacillus. The canine tuberculin we used came from bacilli of the human type, as inoculations of the guinea-pig and of the rabbit with cultures derived from lesions of the dog had shown us; we know, in fact, from Villemin's researches, that the rabbit shows a hyper-sensibility to the bovine virus, while it resists the human virus successfully. Park and Krumwiede based on these *data* their method of determining the bacillary type. We inoculated two rabbits and two guinea-pigs by the venous route with 0·01 milligram of a first culture on potato of the bacillus to be tested. The guinea-pigs died in six weeks of generalised tuberculosis, whilst the rabbits are still alive and apparently unharmed three months after inoculation. The tuberculin comes, then, from human bacilli.

The absence of cutaneous changes in horses tuberculised with bovine bacilli, their presence in horses tuberculised with human bacilli, under the influence of the same tuberculin, proves that there are differences between the bacilli of bovine and those of human origin.

Canine tuberculin indicates that if the etiological identity of tuberculosis in mammals is real, the variability of Koch's bacillus is incontestable. We know the modifications of its morphological characters, and of its virulence for certain susceptible organisms, like the guinea-pig and the rabbit; we have pointed out that the bacillus taken from lesions in the carnivora, although offering the general cultural characters of the bacillus of the human type, at the same time grows much more slowly than the latter, notably in glycerin broth. We note, further, that in neutral animals—horses—our canine tuberculin acts in a completely different way according as it is applied to animals tuberculised with human or with bovine bacilli.

The bacillus of Koch is not, then, always exactly the same with all its biological characters in the organisms of different species of mammals. Like many other microbes, it is transformed within limits impossible to define when it arrives in an organism; it adapts itself to its new host, and in the humoral conflict which results from their contact it acquires new qualities; a certain specific property is established of which we get an interesting glimpse from the varying reactions caused by cutaneous applications of tuberculin.

We are then justified in demanding if certain failures of tuberculin in diagnosis are not due to the use of a polyvalent tuberculin, and if the contradictory results of therapy by tuberculin in man are not due to the use of a tuberculin which is little or not at all suited to the origin of the bacillus which has infected the human being.

(*Ex Recueil de Médecine Vétérinaire*, May 30th, 1926.)

R. L. HIGGINS.

ABSTRACT.

(M. CESARI on "**Antigenotherapy in Tuberculosis by Methylic Extracts of Koch's Bacilli,**" by L. NEGRE and A. BOQUET.)

For several years MM. Negre and Boquet have been pursuing, in the service of Professor Calmette, researches on the properties of the lipoid substances which can be separated from the tuberculous bacillus by alcoholic extraction. Having observed that the bacillary constituents soluble in acetone hinder the separation of the phosphorised substances, they recognised that the principles taken from microbic bodies by methylic alcohol possess a stronger fixative power, in relation to specific antibodies, than those obtained by ethylic extraction. Relying on these experimental facts, MM. Negre and Boquet prepared the antigen which bears their name by macerating in methylic alcohol at 99° a mixture of human and bovine tuberculous bacilli killed by heat, then dried and exhausted by acetone; the liquor separated by filtration constitutes a tuberculous antigen endowed with perfect stability, the preservation of which is practically indefinite.

The methylic antigen of Negre and Boquet, endowed with very great sensitiveness in the search for tuberculous antibodies, was utilised at first for the deviation of complement reaction in tuberculosis; a communication made by MM. Panisset and Verge showed us the use which might be made of it, under this head, in the diagnosis of bovine tuberculosis.

Pursuing the study of their antigen, MM. Negre and Boquet saw that it was endowed with marked antipoietic action. The residue obtained by evaporation of the methylic alcohol, made into an emulsion in physiological saline solution, induces the formation of antibodies when it is injected into healthy animals, and when administered to subjects suffering from tuberculosis considerably increases the number of antibodies contained in the organism. The authors were led in this way to study the effects of methylic antigen in the treatment of experimental tuberculosis in the guinea-pig and the rabbit. The results obtained appeared sufficiently encouraging to incite some clinicians to undertake therapeutic experiments in certain clinical forms of human tuberculosis; the exposition of these experiments constitutes the object of the work.

The authors had observed that in experimental tuberculosis animals subjected to the treatment remained in good general condition. In the same way, patients who receive repeated injections of methylic antigen usually grow fatter and a return of their appetite and strength is witnessed.

As for action on the lesions, MM. Negre and Boquet had noted that the evolution of the experimental disease was notably retarded in tuberculous guinea-pigs and rabbits that were treated, that the lesions did not become generalised in them, as in the controls; finally, that in rabbits treated for several months the alterations showed a tendency to sclerous encystation.

Comparable results are recorded in man; lesions of the skin, mucous membranes, ganglia, bones, joints, peritoneum may diminish or even disappear completely under

the influence of methylic antigen. Some cases, however, resist the action of this remedy.

If the results do not appear as brilliant in pulmonary tuberculosis, certain subjects suffering from this form of the disease benefit, nevertheless, by the treatment. Numerous clinicians who have used this remedy—those, in particular, who have been able to employ it for prolonged periods—recognise that it improves the general condition, stabilises the temperature, and may even, in certain circumstances, exercise a favourable influence on the lesions by directing their evolution towards the sclerous process.

Like tuberculin, it is doubtless by a specific mechanism that methylic antigen excites, in the torpid centres, reactive phenomena of commonplace order which should have a beneficial result if we possess the means of graduating their results. In this respect, the antigen of Negre and Boquet shows itself a more easily-managed and less brutal instrument than tuberculin, for, without involving the dangerous risks arising from the use of tuberculin, it possesses all its curative virtues.

We are certainly very far still from victory, but in a struggle as arduous as that which is to triumph over the accursed disease of tuberculosis, every step forward represents a conquest. By allowing a return to the treatment of tuberculosis by antigenotherapy on which such great hopes were formerly built, the discovery of methylic antigen appears a real advance.

We can evidently hardly think of advising the use of this remedy in the treatment of tuberculous animals, since these demand necessarily, from the prophylactic as well as from the economic point of view, an intervention as radical in action as it is rapid in effect, but nothing that concerns tuberculosis leaves veterinarians indifferent.

(*Ex Recueil de Médecine Vétérinaire*, 30th March, 1927.)

R. L. HIGGINS.

JUDGING OF LIVE STOCK.

Developments in agricultural education which tend to give greater prominence to subjects pertaining to live stock have the hearty approval of farmers. Animal husbandry is the predominant feature in British farming, and it has been the last to receive the attention in educational matters that is its due. The long-standing defect is being repaired, as is evidenced by the institution of judging competitions for students attending the different farm institutes. The Ministry of Agriculture some time ago recognised the need for extending and improving the teaching of subjects connected with the breeding and management of live stock, and approached the National Farmers' Union with a view to providing facilities for holding judging competitions of the type held at Beachendon, Aylesbury, recently. The farmer of the future, even more than the farmer of to-day, will have to depend largely on live stock, and this means that he will have to see that only the best classes of stock are bred and maintained. His only chance rests on providing something of higher quality than competes with him from abroad. It will help him to do this if he has instilled into him in his years of tuition a knowledge of animals, and how to judge them, that will enable him to reject the profitless classes and induce him to cultivate those that will justify his confidence and repay him for their production. The increased attention to livestock matters at the educational centres implied by the initiation of these contests is a hopeful augury.—*The Times*.

DIVISIONAL REPORTS.

Ayrshire Division.

A meeting of the Ayrshire Division of the N.V.M.A. was held in the Ayrshire and Galloway Hotel, Ayr, on March 30th, 1927, the President, Mr. W. Gardner (Maybole), presiding. The other gentlemen present were Messrs. W. A. McGregor, jun., H. Gillmor, D. Weir, R. Smith, Alexander and Taylor (Assistant County Veterinary Inspectors), Forker (Inspector for the Ministry of Agriculture), Professor R. G. Linton (Royal "Dick" Veterinary College, Edinburgh), and the Hon. Secretary, Mr. D. Brown.

Apologies for absence were intimated from Messrs. A. Douglas (County Veterinary Inspector, who was indisposed), Forbes, McKenzie, and D. C. Smith.

Mr. GARDNER then introduced Professor Linton, who had kindly come from Edinburgh to address the Division, his subject being "Progressive Dairying: the Veterinarian's Opportunity." In doing so, the President said:—It is very gratifying to me—and I am sure it must be to my fellow office-bearers—to see such a good attendance at this, the first statutory meeting of a new session of our Division.

At the outset, let me say again I have to thank you for the honour you have conferred upon me in electing me your President for the ensuing year. I am fully conscious of the energy and the enthusiasm that will be required of me effectively to discharge the duties of the office, to maintain the traditions of our Division as a real "live wire" of our parent body, the "National." But with your co-operation and help, which I know will be forthcoming, I shall do my utmost in the interests of our Association and its members during my term of office.

Having been Secretary to a kindred Society during the past six years I can, I think, claim to know what is essential to maintain the vitality of a society, and, believe me, that although an energetic and tactful President is a very great help, and an enthusiastic Secretary and Treasurer are most needful—and no Division is better served in that direction than ours—yet, the success or otherwise of these Divisions is entirely dependent on the whole-hearted support of its members. If, as I hope, this spirit of enthusiasm and all working for a common cause permeates the Society, then my term of office will indeed be a happy one.

We are honoured to-day with a visit from Professor Linton, of Royal (Dick) Veterinary College, Edinburgh, who has kindly prepared a thesis and come, no doubt at some considerable inconvenience to himself, to address us on "Progressve Dairying: the Veterinarian's Opportunity." The subject of the paper, which is the choice of Professor Linton, is very appropriate at this time, in view of the apparent profound depression that presently exists amongst producers in the dairying industry. But from the wide experience and many years' close study of Hygiene and Dietetics that Professor Linton has given to the subject, you will, I am sure, appreciate the fact that it is one upon which he is well qualified to speak.

I now call upon Professor Linton to deliver his address.

(Professor Linton's paper is published, together with the discussion which followed its delivery, elsewhere in this issue of the *Record*.—Ed.)

On the motion of the PRESIDENT, Professor Linton was heartily thanked for his address.

The company then partook of tea and spent a happy hour in general discussion.

D. BROWN, Hon. Secretary.

Southern Counties Division.*

ANNUAL MEETING AT CAMDEN TOWN.

The Forty-third Annual Meeting of this Division was held on Thursday, March 31st, at the Research Institute of the Royal Veterinary College, Camden Town. The retiring President, Major J. S. Wood, of Parkstone, presided, and the others present included Professor G. H. Wooldridge (President of the N.V.M.A.), Major E. S. Martin (Christchurch) and Messrs. John Facer (Southampton), R. E. C. Bullen (Godalming), J. W. McIntosh (London), J. H. Ripley (Hythe), C. Pack (Lymington), and Chas. Roberts (Tunbridge Wells), together with Dr. Sheather, Mr. G. H. Livesey and Mr. K. Ollerhead, *visitors*.

In opening the proceedings, the PRESIDENT said he should like to express his gratitude to Sir John M'Fadyean and the Staff of the Research Institute for allowing them to meet there that day and also for kindly offering to show them over the Institute when they had finished the business of their meeting.

The minutes of the last meeting, as published in the *Veterinary Record*, were taken as read and confirmed, after which the Honorary Secretary (Mr. John Facer) announced letters or telegrams of regret at inability to be present from Miss Cust, Captain Fox (Southampton), Mr. J. A. Moffat (Newport, I.O.W.), Mr. G. N. Gould (Southampton), and the Honorary Treasurer, Mr. E. Whitley Baker (Wimborne).

A letter was received from the Guildford Branch of the British Medical Association inviting as many members as could do so to take part in a discussion on Milk, at Guildford on May 19th. The discussion would take place at the Royal Surrey County Hospital and would be opened by Major Hobday, C.M.G.

A letter read from the Council of the National Veterinary Medical Association invited the opinion of the Society as to (*a*) whether the time has arrived for exercising some form of control over cows that have reacted to the tuberculin test; and (*b*) if so, what form that control should take and how far it is practicable at the present time.

The PRESIDENT, in asking for the views of the meeting, said his own opinion was that they could answer the first question in the affirmative, but when they came to the second question, as to whether it was practicable, he did not see how they could brand reactors as long as the test remained a voluntary one. Unless the test was made compulsory he did not see how they could possibly get control.

Professor WOOLDRIDGE said this letter had received the consideration of a number of Societies and the trouble was the point raised by their President, that although they might consider it desirable it was really impracticable at the present time. If it was impracticable, it seemed to him that the answer suggested to the first question needed some modification. One had to realise the position in which veterinary surgeons and farmers would be placed if an answer to the first question in the affirmative was to be acted upon. It would mean, in the first place, that farmers would decline to have their cows tested if they thought there was a risk of them being branded. That would rebound on the veterinary surgeons, who would not have the testing to carry through, and also, what was far more important, it would very materially interfere with the object they all had in view, namely, the reducing of the number of tuberculous cows in the country. Bearing these points in mind, it seemed to him that to answer the first question in the affirmative was a little premature. They must remember that all reactors were not a source of danger, though they could not tell at what time they might become so. What he feared was that the testing now carried out voluntarily by the farmer and the agriculturist would probably cease immediately, if they realised there was a possibility of an animal being branded and its movements controlled. If they thought this was impracticable it meant that in their opinion the time for it had not arrived, however desirable it might be in principle.

* Received on May 5th.

The PRESIDENT said he thought Professor Wooldridge had summed up the position very well, and he suggested that they should instruct their Honorary Secretary to reply on those lines, and this was unanimously agreed to.

Another letter received from the National Veterinary Medical Association stated that representations had been made to the Royal Sanitary Institute that the section which has hitherto gone by the name of Veterinary Inspectors should in future be called the Section of Veterinary Preventive Medicine.

Professor WOOLDRIDGE said that this matter had already been considered by the Institute and they had decided to accede to the suggestion that a change should be made in the name of the Section, but they thought the title of Veterinary Hygiene was a better one, as the other might lead to confusion with the Section of Preventive Medicine already in existence.

The next business on the agenda was the reception of the Hon. Treasurer's report, but in the absence of Mr. Whitley Baker, Mr. Facer said he could only give them the pleasing announcement in Mr. Baker's letter that they had a balance in hand, subject to any expenses in connection with that meeting, of about £32.

Proceeding to give his own report as Honorary Secretary, Mr. FACER said that at their last annual meeting on March 25th, 1926, they had the pleasure of listening to a paper by Dr. Stanley White, on "The Application of Gland Therapy to Veterinary Practice," and at the September meeting, which was held at Bournemouth, Major Hamilton Kirk read a paper on "Some Aspects of Distemper, with Special Reference to the Nervous Type." Unfortunately, though, their host on that occasion, their President, was not able to be present himself owing to illness. The Summer meeting had to be cancelled owing partly to the General Strike, but they held a very successful meeting at Salisbury in December, when they were the guests of Captain H. R. Rocket and Mr. Harding. One new member had been elected during the year in the person of Mr. Gorton, and at the present time they had sixty-three names on their books.

The PRESIDENT proposed the formal adoption of the Hon. Secretary's report, with a hearty vote of thanks to Mr. Facer for his past services.

This was seconded by Mr. PACK, and unanimously agreed to.

ELECTION OF OFFICERS.

The election of officers was next proceeded with.

President.—The PRESIDENT mentioned that the Senior Vice-President, whom they usually appointed as President, was Mr. J. B. Tutt, of Winchester.

Mr. FACER: As he is willing to act, I do not think we can do better than elect him. (Hear, hear.) He is an old member of the Society and a very able one.

Mr. PACK seconded, and the proposition was at once agreed to.

Vice-Presidents.—The PRESIDENT suggested the name of Mr. J. H. Ripley as the Senior Vice-President for the coming year, but the latter, while appreciating the compliment, said he was afraid he must decline the honour and, on the proposition of Mr. FACER, seconded by Mr. MCINTOSH, Mr. C. Pack was eventually persuaded to accept this office with the retiring President, Major Wood, as the other Vice-President.

Hon. Secretary.—The PRESIDENT remarked that he was sure they could not do better than re-elect their present Honorary Secretary, Mr. Facer, and a proposition to this effect by Mr. PACK was seconded by Mr. RIPLEY.

Mr. FACER said he would like to ask Major Martin to accept the office, but the latter declined, as did also Mr. Bullen, who observed that possibly he might be prepared to take it on another year.

Mr. PACK'S proposition was carried by acclamation.

Hon. Treasurer.—On the proposition of Mr. FACER, seconded by Mr. BULLEN, Mr. E. Whitley Baker was also unanimously re-elected Honorary Treasurer, Mr. PACK humorously observing that "he has certainly served his apprenticeship," to which the PRESIDENT replied that

he believed Mr. Whitley Baker had held the office now for over forty years.

Representatives on the N.V.M.A. Council.—Major Martin and Mr. G. N. Gould, together with Mr. Facer, as Honorary Secretary, were appointed to represent the Division on the Council of the National Veterinary Medical Association.

Council.—Messrs. G. W. Bloxsome, W. F. Maynard, J. W. McIntosh, C. H. Sheather, J. Willett and A. C. Wild were re-elected as the Council, or Executive Committee, for the coming year.

On the suggestion of Major WOOD, seconded by Major MARTIN, it was decided to ask the new President, Mr. Tutt, to represent the Society at the Royal Sanitary Institute Conference at Hastings in June.

Propositions were next invited for a venue for the next meeting, but on the suggestion of Mr. PACK, it was decided to leave this to the President and Secretary to decide.

Major WOOD proposed a hearty vote of thanks to Sir John M'Fadyean and the Staff of the Research Institute for allowing them to meet at the Institute and also for offering to show them round. This was seconded by Mr. FACER and carried unanimously.

Dr. SHEATHER, in reply, said Sir John had asked him to express his regret that he was not able to be present himself to welcome them and, speaking on his own behalf and that of the Staff, he could only say it would give them great pleasure to show them the one or two things they had been able to get together for their inspection.

The members were then conducted round the Institute by Dr. Sheather.

Before leaving the Institute, the PRESIDENT again expressed his own thanks and that of the other members of the party to Dr. Sheather and Staff.

On the proposition of Mr. PACK, seconded by Major MARTIN, a hearty vote of thanks was also accorded to Major Wood for his services as President during the past year.

J. FACER,
Hon. Secretary.

"Clean Milk" Conference at Guildford.

MEDICAL AND VETERINARY MEN EXCHANGE VIEWS.

An interesting discussion on "Clean Milk" took place at the Surrey County Hospital, Guildford, on the afternoon of Thursday, May 19th, when a joint meeting of the medical and veterinary professions was held. More than forty members of the Guildford Branch of the British Medical Association and the Royal and Southern Counties' Divisions of the National Veterinary Medical Association were present.

Major F. T. G. HOBDAY opened the discussion with a well-thought out paper, in which he urged that the eradication of tuberculosis from nearly a million milch cows in this country was a question not only of cost but of expediency.

At the present time in England, he said, there were many hundreds of milking sheds in which the inspector appointed by the Ministry of Health, usually a medical man, had never set foot, and often the official inspector, even if he tried to perform his duties properly, had no practical knowledge of what he was supposed to inspect. Such inspection was obviously the job of the veterinarian and it seemed a peculiar anomaly in 1927 still to find such duties being attempted to be performed by the Medical Officer of Health or the Sanitary Inspector. To put the inspection of milk from the cow to the consumer on a satisfactory basis, from the "clean milk" point of view, the Inspection Board, to be complete, should have a Medical Officer of Health, a Veterinary Officer of Health and a Sanitary Inspector—each would find plenty to do in his own legitimate sphere and neither would overlap the other in the performance of his respective duties.

Major Hobday also drew attention to the astonishing apathy and ignorance of the public on the subject of clean milk and the consequent need for education, which could only be properly given by the medical and veterinary professions.

Dr. NATHAN RAW, the President of the Tuberculosis Society of Great Britain, thought it was greatly to the discredit of this country that, after 25 years' work, ten to twelve per cent. of the samples taken of our milk supply still contained tubercle bacilli. "The public," he said, "are not impressed by the dangers of tuberculous milk. Although I am a staunch advocate of the production of clean milk in the first place, I am aware that this is, for the most part, an unattainable ideal at the present time. I have, therefore, been reluctantly converted to pasteurisation as the only possible way of guaranteeing safe milk for our great urban population."

Mr. G. P. MALE, Reading, said farmers could produce clean milk if the public would pay for it. If only the Milk and Dairies Act were properly administered throughout the country we should hear little about dirty milk.

"The need for pasteurisation would not exist," he said, "since in a comparatively short time only clean milk from tuberculous free herds would be produced."

Dr. HOWELL, the Medical Officer of Health for Hammersmith, said that the superior safety of London's milk at the present time was reflected in statistics which showed a big reduction in infantile troubles. "Pasteurisation has effected a big reduction in the death rate among babies," he concluded. "In Hammersmith, however, we refuse to recognise any grades of milk. We consider that everyone, rich and poor, has a right to expect only one kind of milk—the cleanest and safest. I believe that owing to the uncertain conditions of milk production to-day pasteurised milk is the only grade that fulfils these requirements."

Colonel MATTICK, a representative from Reading University, urged those present to concentrate their energies in rebutting the statement so often heard that clean milk—that is, the higher grades of milk—is an expensive luxury. The production of clean milk was not a question of expensive and elaborate sheds and equipment, but of method.

"Pasteurisation," he stated, "may destroy the noxious germs in milk, but it cannot make dirty milk clean. It is just as easy to produce a clean product as a dirty one. All that is required is the education, firstly, of the farmer and, secondly, of the public, who must be taught to buy clean milk at a fair price."

NOTANDA.

Saints Cosmas and Damian, early Christian martyrs, were physicians. They were twins, born in Arabia, and practised the healing art in the seaport Aegea, now Ayash, on the Gulf of Iskanderan. They accepted no pay for their services and were, therefore, called the "silverless." They were executed by the Prefect Lysias, probably in the year 287 A.D.

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The ancient Greeks and Romans regarded disease as a curse inflicted by supernatural powers and sought rather to propitiate the malevolent deity than to organise the work of relief.

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Two cases of *Brucella abortus* in humans were described in the *North American Veterinarian* and reported as cured after a long illness by intravenous injections of Mercurochrome—220.

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Newborn calves are not permanently infected by their dams with abortion disease, but become susceptible after sexual maturity and particularly after becoming pregnant. (G. C. White).

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There are still large numbers of people who have not yet realised that meat is the natural food of the dog, and continue to feed this carnivore exclusively upon a starchy diet, often to its detriment.

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About three-fourths of the minerals of a cow's body is calcium (*Nth. Amer. Vetn.*).

H. K.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 12-17th.—N.V.M.A. Congress at Torquay.

June 9th—Meeting of the Lincolnshire and District Division at 50 Broadway, Peterborough.

June 13th—Meeting of the Editorial Committee, N.V.M.A., at 4-30 p.m.

June 15th—Meeting of the Scottish Metropolitan Division at the Royal (Dick) Veterinary College.

June 29th—R.C.V.S. Annual Dinner, 7-30 p.m., Hotel Victoria, Northumberland Avenue, W.C.

Members of the Association resident in the Irish Free State who intend visiting Torquay on the occasion of the Annual Congress can obtain particulars as to train service etc., by communicating with the Superintendent of the Line, Paddington Station, London, W.2.

Addresses of Members, R.C.V.S.

During the past week members will have received a copy of the Annual Report of the Royal College of Veterinary Surgeons containing at page 15 a list of members whose addresses are unknown to the Registrar. The Registrar will be grateful to any member who can assist him in tracing these members.

The Registrar takes this opportunity of pointing out that the name of Capt. E. R. H. Woodcock was incorrectly entered in this list by clerical error, Captain Woodcock having informed the Registrar of his permanent postal address in the usual course. The Registrar offers his apologies to Captain Woodcock for the error.

General Medical Council.

Solution of the Irish Difficulties.

Sir Donald MacAlister presiding at the 125th session of the General Medical Council, which opened on May 24th, at the Council's Institute, Hallam Street, referred to the status of medical practitioners in Ireland. Conferences had taken place between the Governments of Great Britain and Northern Ireland and the Free State, and these conferences had resulted in an agreement which had been signed on behalf of the three Governments, had been ratified by the Free State Legislature, and now awaited Parliamentary ratification in this country. It provided that the Medical Acts hitherto in force in Great Britain and Ireland should continue to apply to the Free State, as concerned the functions, constitution, powers, authorities, and jurisdiction of the General Medical Council and its branch councils. It provided that the direct representative for Ireland should continue to be elected by the registered practitioners resident in any part of Ireland, and that the Crown member for Ireland should be appointed by the King in Council, on the recommendation of the Governor of Northern Ireland. It ensured that practitioners registered in the Medical Register should be entitled to be registered and to practise in the Free State. By an Act of the Oireachtas, a Free State Medical Council had been established to maintain a local medical register distinct from the General Register, and to exercise in regard to it a jurisdiction distinct from that of the General Council. But the jurisdiction of the General Council in Southern Ireland would not be displaced or diminished for any purpose of admission to or removal from the General Register, or of maintaining the standard of professional education and examination in reference to registrable qualifications granted in Ireland.

The provisions of the agreement appeared to him to afford a satisfactory solution of the professional problems created by the establishment of the new Governments in Ireland. It was equitable as between autonomous Governments. It was practicable from an administrative point of view. Above all, it necessitated no change in the relations that had so long subsisted between the General Council, its Irish Branch Council, and the licensing bodies and medical practitioners of Ireland.—*The Times.*

Sir Francis Floud.

"The re-arrangements in Government Offices which involve the departure of Sir Francis Floud from the Ministry of Agriculture have robbed agriculture of a sound and trusted adviser," writes the Agricultural correspondent to *The Times*. "For three decades Sir Francis has been closely associated with the Agricultural Department, and his work and counsels in all the offices through which he passed, and especially in the very responsible post he now vacates, have been of the greatest service to the efficient administration of the Ministry and to the benefit of the industry. His approaching departure from Whitehall is deeply regretted by every agricultural body and by every individual who has been brought into intimate touch with him."

We are informed that the salary attached to the vacant Chair of Pharmacology in the Faculty of Veterinary Medicine at Sofia (recently noted in the *Record*) is 10,400 levas a month, which is the same salary as is received by every Bulgarian professor. The contract will be for a period of three years, renewable by mutual agreement. First-class travelling expenses to Bulgaria will be allowed to the successful applicant.

R.C.V.S. Obituary.

Bowlas, Thomas, Penrith, Cumberland. Graduated, N. Edinburgh, 13th December, 1895. Died, 21st May, 1927.

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Gostling, Alfred Edward, 1A Merton Road, S. Hampstead, N.W. Graduated, London, 10th April, 1888. Died, 25th May, 1927.

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Roche (Australia). December 21st, 1926, at Rookwood, Sydney, Australia, Captain Cecil Redmond Roche, Army Veterinary Corps (late 29th Division, B.E.F.), fifth son of the late Redmond Roche, Maglass, Co. Kerry, and Mrs. Roche, Ashton, Cobh, aged 41 years.

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Mr. W. Penhale, M.R.C.V.S., Holsworthy.

"The funeral of Mr. William Penhale, M.R.C.V.S., which took place at Holsworthy yesterday, was attended by a large gathering, which comprised professional brethren, tradesmen, farmers and private residents of the town and a large district around. Deceased, who was held in very high esteem," says the *Devon Express and Echo* of March 27th, "had during his long residence in Holsworthy, associated with much of the public and social life of the place. Formerly, he was for many years a member of the Urban Council, and for three years was its chairman. A devoted member of the United Methodist Church, he was an earnest local preacher, in which capacity his services were ever welcome in the country parishes. Recently his health had been failing, but his death on Monday last came rather suddenly, as he

had attended worship at the Bodmin Street Church on the Sunday morning. His passing, at the age of 75 years, caused deep regret.

"The interment took place in the Parish Churchyard, the mourners including Mrs. Penhale (widow), Mr. J. M. Penhale, M.R.C.V.S., Mrs. Oliver, Dr. Wm. Penhale, Capt. R. H. Penhale, O.B.E., M.R.C.V.S. (sons and daughter), Mrs. J. Penhale (daughter-in-law), Mr. A. D. Penhale (son), Mrs. R. H. Penhale (daughter-in-law), Mr. E. L. Penhale (son), Mr. R. E. L. Penhale, M.R.C.V.S., and Mrs. Penhale, of Torrington (brother and sister-in-law), and Mr. J. P. D. Penhale, M.R.C.V.S., of Barnstaple (cousin).

"Among the floral tributes were wreaths from the President and Members of the Western Counties' Division of the National Veterinary Medical Association, and from Mr. and Mrs. Dawes and family."

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The Late Professor Penberthy, J.P.

An Appreciation.

Our profession and agriculture have sustained an unusually heavy loss by the passing of one of their greatest friends. Before TIME in its cruel but merciful manner dims our memory of him, it is but fitting that someone who, like the writer, was one of his intimates, should have the sad privilege of contributing a few sentences to express, however inadequately, the grief which we all feel. Reference was made in the last issue of the *Record* to some of the offices and appointments held by him, but to enumerate the whole of them would need more space than can be spared. For some years he was Chief Veterinary Inspector to the Royal Agricultural Society of England, and he filled a similar position for many years at the annual shows of the Shire, the Hackney, the Bath and West, and the Royal Counties Societies and the Richmond Show. He was also an active member of the Foundation Committee of the Victoria Veterinary Benevolent Fund.

Upon his retirement from the Camden Town School in December, 1907, he interested himself largely in farming and, becoming a landlord, identified himself with agricultural societies and clubs, being in due course elected Chairman of the Farmers' Club. In this way he became *persona grata* with many of the leading agriculturalists of the kingdom and was regarded as a great authority on the diseases of animals. In many cases he became their permanent adviser and thus, apart from the advantages which accrued to himself, his policy was of the greatest value in developing and cementing a co-operative confidence between veterinarians and agriculturalists which will prove of lasting benefit to our profession.

The greatest asset, however, possessed by the late Professor was his capacity for showing kindness to others, and during the whole of the time he was at Camden Town he was a real friend to the students, particularly to the shy, the nervous, and the self-conscious, and most of the men there during his period have been recipients of his acts of kindness. At the close of a graduate's career he was always to be relied on for advice and help as to what the newly-qualified should do, and it can be no exaggeration to say that many a man owes his start in life to John Penberthy. As a very old and mutual friend, himself an ex-President of the R.C.V.S., in a letter to me a few days ago said: "He was a general pal to the boys of our day."
—E. ALFRED WEST.

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Limerick Inspector's Death in Collision.

We regret to record the tragic death, as the result of a collision when motor-cycling, of Mr. D. B. Colbert, M.R.C.V.S., Veterinary Inspector, Kilmallock, Co. Limerick. When returning from Kilteely on Saturday last, Mr. Colbert collided with a donkey cart at Bulgaden, his neck being broken.

"Subsequent to the inquest," says the *Cork Examiner*, "the owner of the donkey and cart, Thomas Real, was taken into custody and brought before a Peace Commissioner, who remanded him, on his own bail, to Kilmallock District Court."

R.V.C. Rebuilding Fund.

In aid of the above fund a £10 whippet handicap (the winner also to receive a silver cup) and a whippet match (over four flights of hurdles) will take place at the Customs House Sports Ground, Bingley Road, Custom House, E., on Saturday, June 18th, at 3-30 p.m. A charge of 1s. 2d., including tax, will be made for admission. It is hoped that many of our readers will find it possible to assist the Fund by attending and supporting the efforts of the promoters. The ground has been kindly lent by Wright Cundy, Esq., and the prize money is being given by a lady interested both in the sport and in the College.

Proceedings under The Tuberculosis Order.

The maximum penalties, in one case £20, and in the other £25, were imposed on Cecil Beasley, of Lea Bridge Road, Walthamstow, owner of a Markyate farm, at Luton Borough Court, for having in his possession three cows which appeared to be suffering from tuberculous emaciation, and not notifying the police, and for cruelty to two cows by travelling them on the road in an unfit state.

The defendant pleaded not guilty to the first charge, and, on being convicted of this, pleaded guilty to the second.

P.-S. Gardiner said he was in Cumberland's Sale Yard, Luton, on April 25th, and saw six cows. Four of them were in an extremely emaciated condition, and one was continually coughing.

Alfred Webster, Bridge Street, spoke to fetching the six cows from Hollybush Farm. There was no food in the field in which the cows were standing.

Mr. K. J. Urquhart, M.R.C.V.S., said it was obvious the cows were suffering from tuberculosis emaciation, and it was the duty of the owner to notify the police.

Arthur E. Halstead, farm foreman to Mr. C. C. Beasley at Markyate, said he advised defendant not to send the cows to market.

Defendant said he suspected the cows were suffering from another disease, and this proved to be so in one case. The cows were valued at 30s. each, and if they had been destroyed by order of the local authority, he would have received at least 45s. each. Had he known they were suffering from tuberculosis, it would have been to his advantage to report it to the police.

Inspector S. G. Sargent, said it was the worst case he had ever seen at home or abroad. It was gross cruelty to drive the cattle seven miles to Luton market.

The Mayor said the magistrates regarded this as a very serious case indeed. They had come to the conclusion that they must impose the maximum fine in both cases, in the first £20, wih £1 10s. 6d. costs, and in the second £25, with £5 5s. costs. The alternative was two months' imprisonment for each offence.—*Walthamstow Guardian.*

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That 6 per cent. of the dairy cows in the neighbourhood, especially the old cows, were suffering from tuberculosis, was a statement made by a veterinary surgeon at Burnham Police Court recently, when Alfred Beard, of Dorney, was summoned for failing to notify tuberculosis in a cow at Dorney.

Defendant pleaded not guilty.

Inspector Honour said on May 7th, he visited defendant's premises at Lodge Farm, Dorney, where he saw a red cow in an adjoining field. It was in very poor condition and suffering from a chronic cough. It was obviously suffering from tuberculosis. Witness interviewed defendant and asked him if he was aware of the condition of the cow. He said: "I thought she was suffering from sore throat. I have been dressing it with oils." He admitted that he had not called in a veterinary surgeon to examine the cow. Witness asked him why he had not reported the matter to the police and he replied that he did not think the animal was suffering from any disease. Witness called

in a veterinary surgeon, who certified that the cow was suffering from tuberculosis.

Mr. R. C. Tennant, F.R.C.V.S., of Windsor, said he saw the cow which was in a field by itself. The breathing was rather stertorous, and the animal appeared to be suffering from tuberculosis. He examined the cow externally and found no external glandular swellings. Subsequently the cow was killed and a *post-mortem* examination showed the presence of tuberculosis of the lungs, pleura and peritoneum. There was a tuberculous abscess at the base of the lungs. The disease was advanced and throat trouble, pneumonia, or tuberculosis might have been suspected.

Defendant (on oath) said the trouble started when the cow got a piece of mangel in its throat. He dressed the cow with linseed oil and rubbed its throat with embrocation. As it seemed to get no better he thought the best thing he could do would be to send the animal away and have it destroyed. He had no idea the cow was suffering from tuberculosis—it was the first cow he had ever seen with the disease. Had he known he would have notified the authorities at once.

Mr. Tennant, recalled, said an inspection of the cows for foot-and-mouth disease purposes would not reveal tuberculosis. A minute examination would be necessary. He then made the statement that old cows appeared to be all right until they calved, but three weeks after they went to pieces. He did not think a man like defendant would be able to detect tuberculosis from the cow's appearance, for it was not emaciated. Nine out of ten emaciated cows had tuberculosis.

The case was dismissed, the Chairman telling defendant to be careful in future.—*Windsor Express.*

. . . . . .

At a meeting of the Diseases of Animals Sub-Committee of the Essex Agricultural Committee at Chelmsford, it was reported that under the Tuberculosis Order, for the quarter ending March 31st there were 215 reported cases, and 188 animals had to be slaughtered, £1,262 17s. 6d. being paid in compensation. Of this, £947 3s. 1d. had been refunded by the Ministry, £217 15s. 1d. recovered by salvage, leaving a net cost to the county of £97 19s. 5d. During April the number of animals slaughtered in Essex had been 118, the highest number of any county in England, Scotland and Wales. Mr. J. B. Gill said that this did not imply that Essex was worse than any other county, only that the Order was administered more efficiently.

The Detection of Anthrax.

Aberdeen County Council considered, at its May general meeting, the advisability of inaugurating a subsidiary system of local bacteriological investigation in cases of suspected anthrax in view of alleged dissatisfaction among farmers at some of the decisions of the Ministry of Agriculture's officials. It was decided, however, to delay final decision for a month, in order that a report might be received from Mr. George Howie, the County Veterinary Inspector.

International Horse Show.

Under the patronage of H. M. The King, the Sixteenth International Horse Show will be held at Olympia, London, from June 16th to 25th. The entries in the various classes are so numerous that there will be three sessions every day with competitive international jumping at each afternoon and evening performance.

The Royal Gala performance will take place on Monday afternoon, June 20th, when officers representing the armies of Belgium, France, Great Britain, Holland, the Irish Free State, Italy and Sweden will jump round the course for the King George V. Gold Cup at present held by the United States of America. The foreign officers are bringing with them seventy-eight specially trained horses.

The Prince of Wales' Cup will be jumped for by three officers from each nation on Thursday afternoon, June 23rd. This most exciting event was last year won by the British Army. Many officers and horses are preparing to defend the title and they are much encouraged by the fact that the first team of jumpers ever sent out of this country by the War Office has won the Cup of the Nations, the Continent's premier award, at Nice.

The popular Scurry Stakes, which is an indoor steeplechase, where speed as well as clean leaping counts, is retained, and a wholly novel feature will be the Handy Hunter Stakes in which the horses have to jump over a very winding course, there being no straight runs between the hedges, rails, gates, banks, fences, hurdles and triple bars.

Among other new trophies is the Brooks-Bryce Challenge Cup, given by Mrs. Brooks-Aten and which is also jumped for at the New York Horse Show. Other notable items at Olympia will be two coaching marathons, the visit of the Coaching Club, parades of officers' chargers and mounted constables, jumping for the Connaught Cup by the British Army, tradesmen's turn-outs and the coster carnival to enable the Earl of Lonsdale to find London's best donkey.

The International Horse Show Box Office is open at 12 Hanover Square, W.

The Alert Sex.

"Cows charge with their eyes open, but bulls charge with their eyes shut," said a veterinary surgeon, giving evidence at Windsor County Court.

Miss Eileen Pusey, of Chalvey, near Slough, sued Mr. G. H. Timber, butcher, of Chalvey, for £5 15s. in respect of a coat and jumper damaged when a cow owned by Mr. Timber charged her and pinned her against a wall.

Mrs. Ethel Lane, for Mr. Timber, contended that the cow was a domestic animal, being driven lawfully along the street, and that the question of negligence did not arise.

Judge Randolph said he would have to reserve judgment on an important point of law.—*Daily Express.*

"Mrs. Wretch, whose work on behalf of the cats of the Empire entitles her to the esteem of all cat lovers, is organising a scheme to provide these overworked animals with a little recreation. It is proposed to start cat-racing in London: the idea being that a drove of cats shall hunt an electric mouse round a specially built stadium. 'Why should greyhounds have all the fun?' she asked recently."—*Daily Express.*

Army Veterinary Service.

London Gazette. War Office. Regular Forces.

May 27th. The following Captains to be Majors:—J. Southall (March 28th), with seniority July 1st, 1926; G. Lloyd, D.S.O., F.R.C.S. (July 1st, 1926); B. J. W. Nicholas (July 1st, 1926); E. Wallace (October 18th, 1926), with seniority July 1st, 1926; P. Howard (March 28th), with seniority July 1st, 1926; F. J. Andrews (October 18th, 1926), with seniority July 11th, 1926; M. A. Murphy (October 18th, 1926), with seniority July 11th, 1926.

"Quacks" and "Sun-rays."

A warning against "quacks" who exploit ultra-violet radiation is contained in the annual report (issued recently) of Dr. J. Clark, medical superintendent of Sheffield Poor Law Hospital, Fir Vale.

Radiation, he says, lends itself readily to exploitation by unscrupulous persons who hope to get rich quickly. To judge from advertisements in the Press, ultra-violet rays are a cure for all the ailments that flesh is heir to. Many lamps probably emit no ultra-violet rays at all, and these are, of course, harmless, but there is no doubt that definite harm can be done by radiation. The best lamps so far produced are a very poor imitation of natural sunlight, but many patients prefer to be cooped up in a light-treatment room in the summer rather than to be out in the open.—*Yorkshire Post.*

The following is a list of the Shows to be benched by Spillers Victoria Foods during the present month:—June 6th—Gainsborough, Sunderland, Falmouth Canine Society; 7th—Leeds and District Canine Association; 8th—Berks, Bucks, and Oxon., Windsor; 8th and 9th—Royal Cornwall Agricultural; 15th—Pomeranian Club, St. Marylebone, York Agricultural and Hound, York; 16th—Sealyham Terrier Club, Pembroke Dock, Grimsby and District Canine Society Open Members; 18th—Birmingham and District Fox Terrier Club Open; 20th—City and Suburban Canine Society Members, Clapton; 21st—Pekin Palace Association; 22nd—Exeter Canine Association, Munster Agricultural Society Dog, Cork; 23rd—Whitley Bay and Monkseaton; 25th—British Alsatian League, Dorking; 29th—Liphook, Haslemere and District, Liverpool Championship, and Cheltenham and Gloucester Canine Society, Cheltenham.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

Mare's Milk.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I shall be glad if you will allow me to take advantage of the *Record* in order to ask members of our profession if they will kindly send me some samples of mare's milk for analytical purposes. About half a pint will be sufficient quantity, and two or three drops of formaldehyde should be added as a preservative. Samples of milk from mares in cases where the foals are not thriving are particularly desired.

I shall be very grateful to anyone who will kindly assist me in this matter.—I am, yours faithfully, R. G. LINTON.

Royal (Dick) Veterinary College,
Edinburgh.
Department of Hygiene.
26th May, 1927.

The Eradication of Tuberculosis.

TO THE EDITOR OF THE VETERINARY RECORD.

Sir,—I was very pleased to see Mr. Henry Gray's article in last week's issue. I have long been entirely of his opinions with regard to the question of tuberculosis in this country. Leaving out of the argument the injurious effects of tuberculosis to children, its eradication should be commenced at once as an economic necessity. The nation cannot afford the wastage at present occurring, still less can it afford the increase in that wastage bound to take place if the present *laissez faire* attitude continues. If every owner of cattle subscribed in proportion to the number of stock owned by him, eradication coould be carried out; but naturally it is a job for the State, and should be undertaken by it.

If we had no tuberculin test, people would say "if you could only tell us which animals are affected and which are not we could easily get to work"; as it is, we often do as much harm as good with tuberculin, *i.e.*, testing a man's cows and allowing him to dispose of reactors at his own discretion, hence spreading the disease and doing positive harm to stock owners.

Our pedigree stock are still required all over the world—one need not point out the advantages of breeding them in a tuberculosis-free country. "The Tuberculosis Order, 1925, has been a sheer waste of money." I believe that all thinking people will agree with this short sentence of Mr. Gray's. The veterinary surgeon seems to be encouraged to shut his eyes and not to find more cases than he can help. It would be hard to find a more feeble method of going about things. People say it is the thin end of the wedge, farmers must be trained, slowly does it, etc., etc. Personally, I am tired of this "going slow," and think it high time farmers and all concerned should be made to toe the line. I desire nothing short of Parliamentary Acts in exact accordance with the latest opinions of our leading scientists (medicals, veterinarians, etc.) and that without delay.

Those who say it would cause a milk shortage must be very hard up for an argument. In my view, what Mr. Gray says is true—that if the milk supply was (for example) halved for five years, no evil would result. The State, of course, could fix the price and see to it that children of all classes would not go short.

I do not think there is any difficulty about funds. What are a few millions expenses to the millions saved by the eradication of tuberculosis from our stock and saving unnecessary suffering amongst our children? We have the knowledge, we have the experience of America, Guernsey, etc., we have the men—then what is keeping us back? Is it not peculiarly the duty of the veterinary profession to do its utmost to get the job started?—Yours faithfully, J. M. ARMFIELD.

Garth Steading,
Chipstead,
Surrey.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the Derbyshire Division, from Mr. O. V. Gunning, Hon. Secretary.

Report of a Meeting of the Scottish Metropolitan Division, from Mr. W. C. Miller, Hon. Secretary.

Communications from Professor L. de Blieck, Messrs. H. Gray, R. L. Higgins, J. H. M. Hughes, J. L. Perry, and W. L. Stewart.

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Prof. Sir John M'Fadyean, M.R.C.V.S., M.B., B.Sc., LL.D.

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Copies of the Regulations may be obtained at the College.

The College Calendar, containing full particulars, will be forwarded on application to The Secretary, Royal Veterinary College, Camden Town, N.W.1.

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